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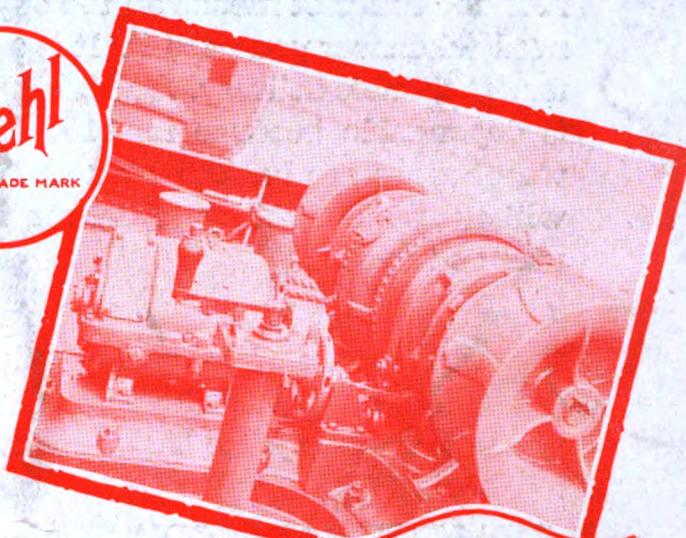
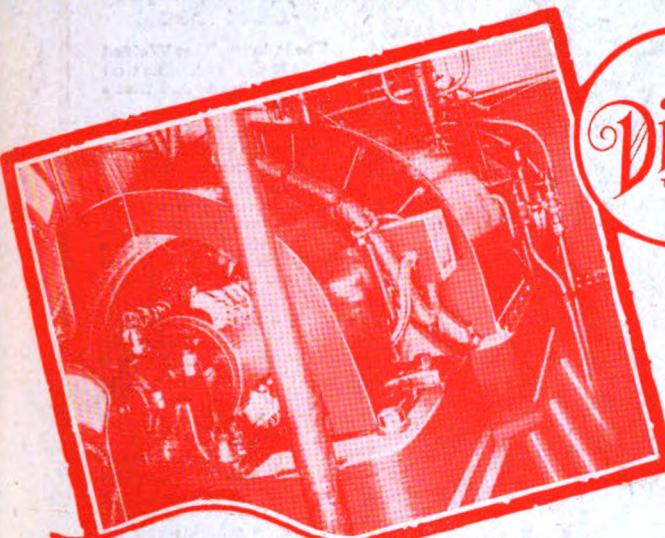


Illustration above shows the DIEHL 50-KW Generator. Flywheel and armature at back end, as well as commutator at front end, are protected by substantial sheet metal housings.

Illustration below shows the DIEHL Enclosed Ball Bearing Drip - Proof Marine Type Motor operating the circulating pump. Note the water tight connection box at right, also the water-tight push button station above connection box. Electric wires pass through steel conduit to push button station, thence through connection box to motor.

The eight new Diesel barges recently built by the New York Shipbuilding Corporation and the Sun Shipbuilding & Dry Dock Corp., for the Standard Transportation Co., are equipped with

DIEHL Marine Type Motors and Generators

The type of motor which the *Diehl Manufacturing Company* is building for use on American ships has qualities and distinctive features which justify the term "marine type" as compared with the ordinary motor for land service. It has strong and rugged housings and compact bearings. All small fittings are of non-corrodible material. And most important of all, the quality and the amount of insulating material and treatment of the insulation to exclude moisture, is distinctly superior to that ordinarily used.

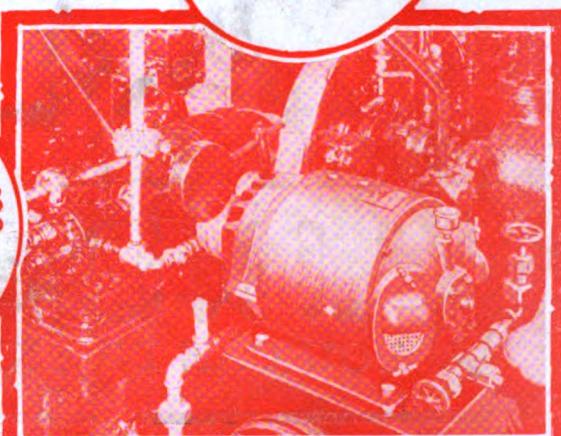
This type of equipment cannot help but yield better service, longer life, and fewer break-downs.

Above Illustration shows Forward Windlass being operated by a DIEHL water-tight motor located on the weather deck. The controller and rheostats are mounted beneath the deck, and are operated from a vertical pedestal beside the windlass.

Illustration below shows the DIEHL Ice Machine Motor. These ball bearing, drip-proof motors have grease cup lubrication. Switch for starting and stopping motor is located in the rigid conduit line leading to motor. Push button control is absolutely water proof. Furthermore, there is no exposed wiring.



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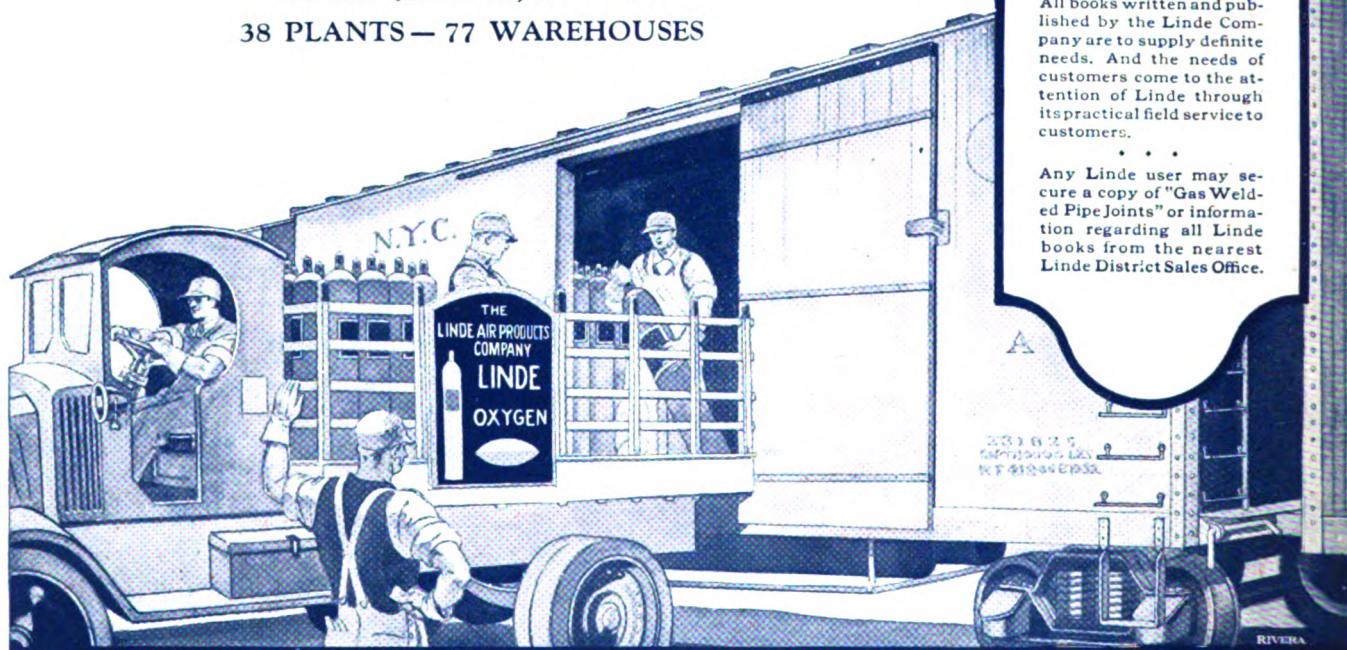
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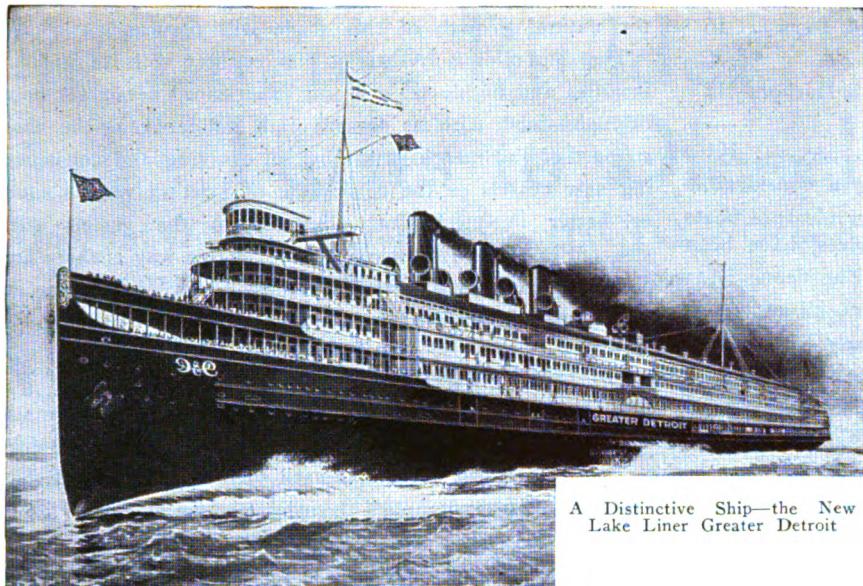
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Marine Review

R. V. SAWHILL
Editor

June

1924

U. S. Yards Build Distinctive Ships

A Portrayal of American Shipbuilding From Jan. 1, '23 to May 1, '24

ONE hundred and one vessels, completed, building or contracted for in the last 16 months are listed on pages 242 and 243. Twenty-eight of these representing a total of about 50, are especially illustrated and their principal characteristics noted in detail, on pages 217 to 264. Our pages this month thus present a complete record of all new major powered steel vessels and a detailed account of the distinctive vessels giving a true cross section of all types.

No truer measure of the status of the merchant marine of any country exists than a review of its shipbuilding. A prosperous, growing and progressive merchant marine inevitably means activity in shipbuilding. Every active unit of the merchant marine is slowly but surely approaching the time when, obsolete and worn out, it must be replaced or the service in which it is now engaged curtailed. All idle units are just as surely and more rapidly approaching the end of their period of possible usefulness. The need for vessels of special design to meet the growing demands of established transportation routes and of new ventures must be met. Progress in shipbuilding, therefore, is a true index of the virility of the merchant marine in normal times.

Times are not yet normal, however, as the extraordinary number of ocean freighters constructed as a result of the war have not been absorbed by the needs of transportation and continue to glut the cargo ship market. An analysis of the record of new ships listed shows that, though the percentage of all tonnage entered and cleared in the foreign trade carrying the American flag, had increased from 26 per cent for the fiscal year 1914 to 46 per cent for the fiscal year 1923, only two cargo vessels and one passenger vessel were built or contracted for in the past 16 months, destined specifically for the foreign trade.

To hold and gradually to increase the present proportion of American vessels in the foreign trade new ships must be built in the near future, particularly passenger ships. As

the foreign trade is highly competitive, mechanical efficiency in ships for this trade is essential, and conversion of appropriate existing cargo vessels to oil engine drive, must also be undertaken at once. It is clear that the future prospects of shipbuilding for larger and more elaborate ships depend on the successful maintenance and expansion of American shipping in foreign trade. The greater part of the considerable increase of American tonnage in the foreign trade in recent years is directly due to government ownership and backing, with losses paid out of the United States treasury. The country must give serious recognition to the vital importance to national interests of carrying a fair proportion of our own foreign trade in our own ships. Such recognition would encourage the reasonable expectation that American ships under private ownership will in time find it profitable to continue these services.

In the meantime, due to the rapid growth in population, the expansion of industry and agriculture resulting in greatly increased wealth, constant replacements and additions are required to the fleet necessary for domestic commerce. With nearly complete cessation of naval construction, if it were not for the requirements of our domestic commerce, American shipyards would have been at a standstill as the record for the past 16 months vividly shows according to the following tabulation of type and service:

Type	Service	Number
Passenger	Domestic Coastwise	15
Freight	Domestic Coastwise	6
Tanker	Domestic or Foreign	6
Tanker	Domestic, Rivers & Bays ..	13
Special	Domestic, Bays & Lakes ..	13
Passenger	Foreign, Ocean	1
Ore Carriers	Foreign, Ocean	2
Passenger	Domestic, Great Lakes	2
Freight	Domestic, Great Lakes ...	15

Ferries	Domestic, Rivers & Bays ..	16
Dredges, Transports		
Tenders, Fire Boats	Domestic, Rivers & Harbors	12
	—	
	Total	101

Besides the above vessels of major size, a considerable number of tug boats, work boats, and larger pleasure boats of all kinds, with steam and oil engine drives, have been built or are building and under contract. The demand for nonpowered oil barges, car floats and lighters, all adding to the total of steel tonnage, has been particularly active. Extensive repairs and reconditioning of a number of large passenger liners and freighters and the conversion of several steam cargo ships to oil engine drive and electric auxiliaries, has also in the aggregate amounted to an important item in shipyard work.

What are the immediate future prospects for work in American shipyards? These prospects are certainly better than they were a year ago. Now as then it is quite impossible to present any considerable list of new contracts pending, but the morale of the American merchant marine has improved. An industry cannot go through a long ordeal of hardships, trials and stress without improvement to its character, and with proper qualities of leadership, inefficiency and waste are eliminated and a stiffening of courage and purpose are inevitable. If this is not true, if leadership of intelligence and determination is lacking or is not soon forth coming, the merchant marine is hopelessly doomed and the nation might just as well admit failure now. So today, both the government and private owners and operators have awokened to a real interest and concern in regard to all phases of mechanical efficiency of their ships.

Under the terms of section 11 of the merchant marine act of 1920, money may be advanced in the form of favorable loans by the government to private owners for the construction of new ships; also under section 23 of the same act, money due the government in the form of war-profits and excess-profits taxes, may be diverted as a direct aid to the respective steamship companies, in building new vessels of approved type, in American shipyards.

Indications are that these provisos will finally be put into practical fulfillment. Negotiations have been and are now progressing along these lines. Plans have been prepared for the largest combination passenger and cargo vessel ever built in an American shipyard. One large passenger and cargo liner for the domestic trade, originally planned a year ago is still under consideration, and a contract for her construction is likely. Six passenger and vehicle ferries for New York harbor are to be built. Other large ferry boats for railroads are under serious consideration. Additional oil tankers both for domestic distribution and ocean service are needed and specific plans are under way. Passenger boats, freight boats and tow boats for the Mississippi river, and suitable types of self-propelled vessels, tow boats and lighters for service from New York to the Great Lakes on the Hudson river and the barge canal are needed. A survey of the fleets engaged in the coastwise service would undoubtedly show many old, inefficient and obsolete units which could be replaced to good advantage. Furthermore

the natural growth of this trade will require.

The shipbuilding industry of this country with its material facilities and highly trained and experienced personnel must be maintained, with its present high standards, as the chief support of the merchant marine, in evolving and constructing new vessels or the conversion of existing vessels equal or better in mechanical efficiency to the vessels constructed in foreign shipyards. Only in this way is there any chance of continuing American vessels in the highly competitive foreign services.

Worshipping Little God of Speed

IT WAS the late President Woodrow Wilson who made famous the phrase "a single track mind." Years before his time, however, the Cunard Steamship Co., Ltd., had surely acquired and applied this phenomenon of mental habit. For half a century and more, this line has had "a single track mind" on the question of speed of its ships in the transatlantic service. The fleet LUSITANIA and her famous sister-ship MAURETANIA, still in service and one of the best known and well liked of transatlantic liners, represented when they came out in 1903 and 1907 the culmination of the dream for supremacy in speed. To this day, the MAURETANIA holds the record of 4 days 10 hours and 41 minutes in crossing the Atlantic from Queenstown to New York made in September, 1910. Her pre-eminence in speed has, however, since then been somewhat dimmed by the MAJESTIC and the LEVIATHAN each holding respectively the eastward and westward records between New York and Cherbourg.

In a careful analysis of speed records up to the time of going to press, in the November, 1923, issue of MARINE REVIEW, the following significant statement appeared, "For present day performance in speed, the six fastest transatlantic liners may be divided into two groups of three each according to speed and with little to choose from in each group to show which is the fastest ship. In the first group may be placed without chance of argument, the LEVIATHAN, MAJESTIC and MAURETANIA, in the second group the AQUITANIA, OLYMPIC and BERENGARIA." Nothing has happened since this was published to affect the accuracy of the above statement.

How then in fairness can an item of this sort, recently received from the Cunard company be treated? "Chief Engineer Patterson of the Cunard liner AQUITANIA says that as far as he knows his ship holds the record for a short spurt, logging 16 knots for a period of 29 minutes, the rate of speed being 33.1 knots per hour. While doing this, the ship had in her favor wind, tide and swift current. The sprint was made on Nov. 19 of last year. This is more than three knots above the best recorded spurt, others being: MAJESTIC, 29.70; LEVIATHAN, 28.04."

Isn't this a perfect example of a "single track mind?" Cunard line ships have had an enviable reputation for speed and still have. How much of it is due to everlasting thinking, talking and getting published facts about speed performance of its ships? Let other steamship companies who aspire to supreme reputations for some particular quality take a lesson from this and apply the same singleness of purpose and concentration of effort, and they too may be successful.

Big Engine Builder Turns to Diesel

Hooven, Owens, Rentschler Co. Has Taken Over License to Build Famous M. A. N. Engines

AN ENGINEERING alliance of real significance to the American marine industry became effective on May 1. On that date, the Hooven, Owens, Rentschler Co., Hamilton, O., took over the license to build M. A. N. marine and stationary diesel engines.

The Hamilton company stands out prominently among successful American engineering and manufacturing plants. It has been designing and fabricating engines and machinery for 79 years. It has built more than 500,000 horsepower of reciprocating marine engines. Its war record of four 2800-horsepower steam engines a week showed the ability of the company to work on a high production basis without sacrificing those qualities of accurate manufacture essential in engine building.

The American company has built all types of engines and, as a logical de-

velopment, began some years ago the study of the diesel engine. After original experiments and several inspection tours through European plants, a group of engineers was developed thoroughly familiar with diesel engine design and practice. Following the last of these European tours, the arrangement was made with the M. A. N. company which has just taken effect.

This alliance places in the hands of one of this country's oldest and best known engine builders, the designs and systems of the original diesel plant which in all has built an enormous total of diesel horsepower. Directors of the Hooven, Owens, Rentschler Co. who negotiated the new arrangement and will direct its performance, are Gordon S. Rentschler, a director of the National City bank of New York and also of Niles-Bement-Pond Co.; W. B. Mayo, chief engineer of the Ford Mo-

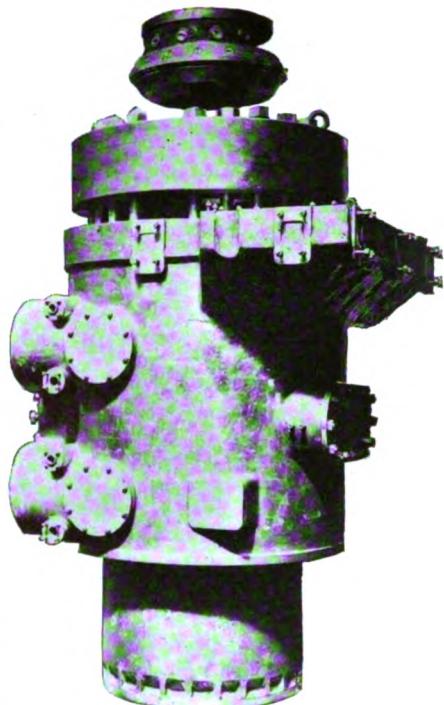


FIG. 2—ONE-PIECE CYLINDER

tor Co.; George H. Helvey and Clarence H. Helvey, both of the Black & Clawson Co.; John H. Black, and George A. Rentschler Jr., managing director of the company.

Maschinenfabrik Augsburg-Nürnberg A. G., more generally known as M. A. N., is one of the large engine and machinery builders of the world. Situated in Bavaria, there are two major manufacturing plants; one at Augsburg, the other at Nürnberg. In each plant, 7500 to 8000 men are employed. M. A. N. for a long period has been supplying various kinds of power machinery, such as ship engines, engines for all kinds of stationary purposes—steam, gas and oil engines, railway equipment, etc.

Dr. Diesel at M. A. N. Plant

Shortly after Dr. Diesel secured his original patents, he went to the Augsburg plant of the M. A. N. company for the purpose of practical development. There the very first diesel engine was built jointly under his supervision and that of Dr. Imanuel Lauster—today the managing director of the Augsburg plant. From this small beginning at Augsburg with a single cylinder experimental engine, in successive steps has been evolved the diesel engine as it is known today. These steps, of course, have included the 4-cycle single acting, the 4-cycle double acting, the 2-cycle single acting, and the 2-cycle double acting development.

After the development work of Dr. Diesel and Dr. Lauster had progressed to a sufficient point, the manufacture of diesel engines was taken up by the Nurn-

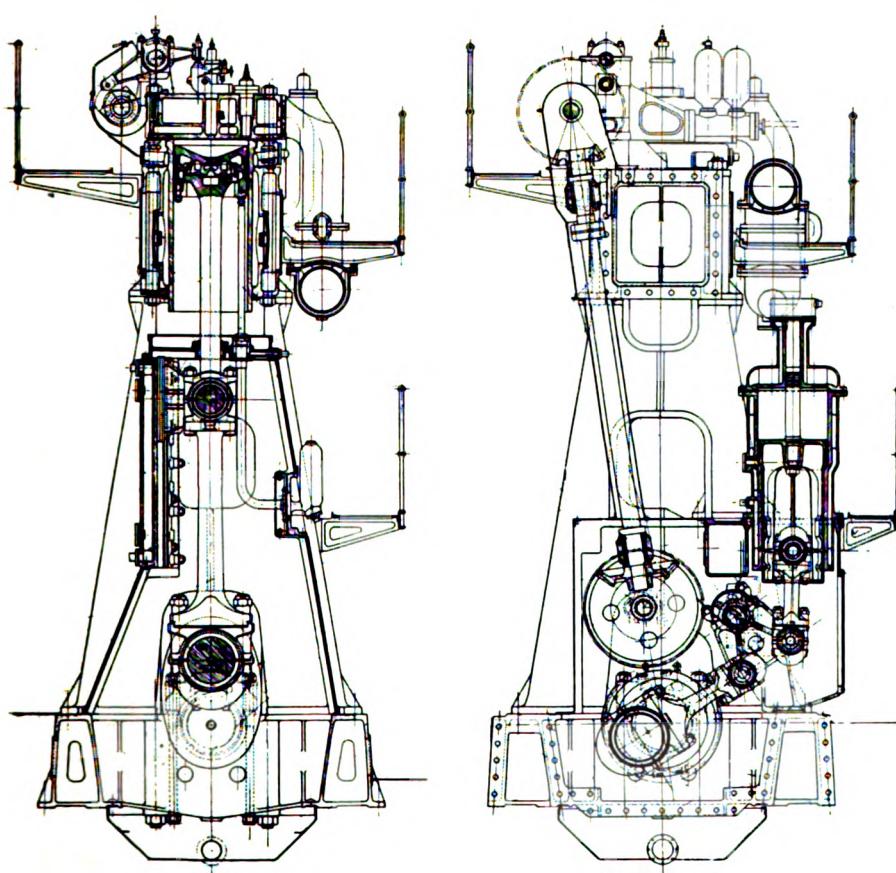


FIG. 1—CROSS SECTION THROUGH CYLINDER AND COMPRESSOR OF 4-CYCLE, SINGLE ACTING M. A. N. DIESEL ENGINE

berg plant as well, and after a period of years Augsburg was building engines of the 4-cycle type and Nurnberg was building engines of the 2-cycle type. Within the last few years, the entire diesel activity has been transferred to the Augsburg plant, where now 50 per cent of the capacity of their huge workshops are devoted exclusively to diesel engine building. The Nurnberg plant is devoting its attention to gas engines over 1000 horsepower, steam engines, steam turbines, railway equipment; and also there is enjoyed a high prestige in construction building such as bridges, cranes, etc.

Licenses Early Builders

Before 1900, some of the old and established European firms were coming to Augsburg to secure licenses for the construction of diesel engines. Arrangements were accordingly made with builders who are now world-famous, and thus the foundation for the diesel engine industry was laid. Augsburg, therefore, was the seat of diesel engine learning, and it is interesting to recall that the laboratory instinct which pre-

vailed then is still so much in evidence at this time.

As in any pioneer industry, many difficulties and obstacles were encountered by these licensees, and as these matters were referred to the Augsburg laboratories, there were disseminated the answers as a result of their intensive research work in the initial stages of European diesel engine building.

Probably the greatest contributing reasons to the wide adoption of diesel engines abroad are because of the keenness of competition and the necessity

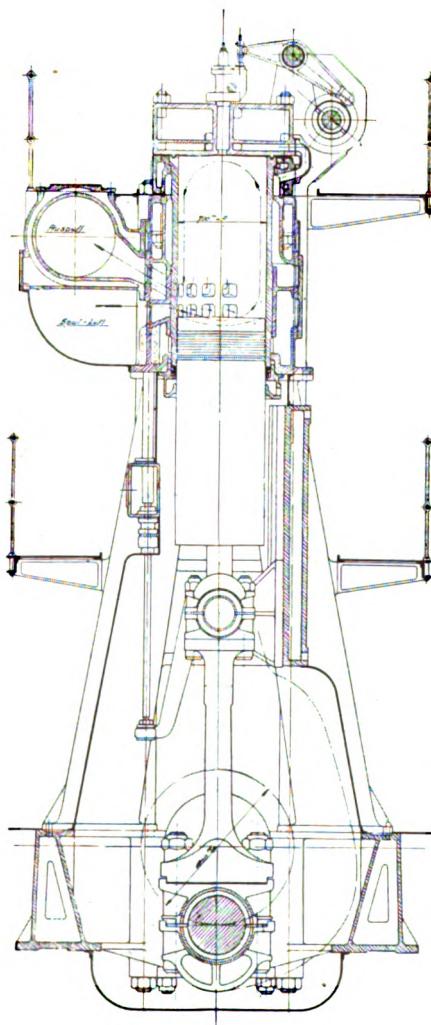


FIG. 3—SECTION OF 2-CYCLE, SINGLE ACTING MARINE TYPE DIESEL

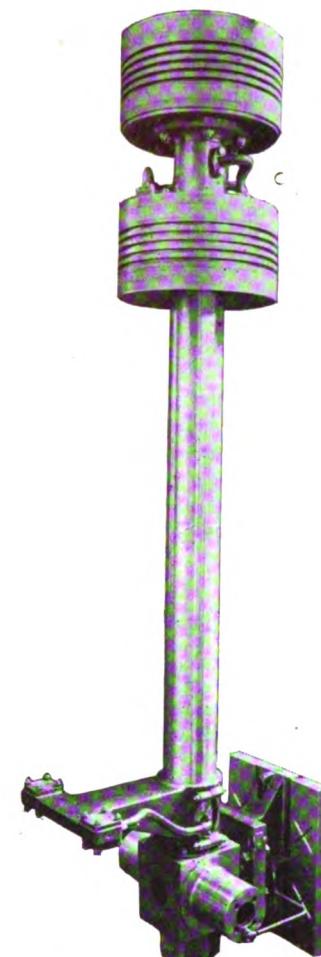


FIG. 4—PISTON IS MADE IN THREE PARTS

for the greatest economies in mechanical appliances. Therefore, users of power rapidly turned to the diesel engine, and by 1908 or 1909 diesel engines were being quite generally used for land purposes.

The M. A. N. company early turned to developing high-speed diesel motors of both 4-cycle and 2-cycle types for use in submarines, and at the time of the outbreak of the war in 1914 these engines had been developed to a truly remarkable degree of reliability. Also prior to the outbreak of the war, there had been certain notable land installations of substantial horsepower, and M. A. N. research had been extended

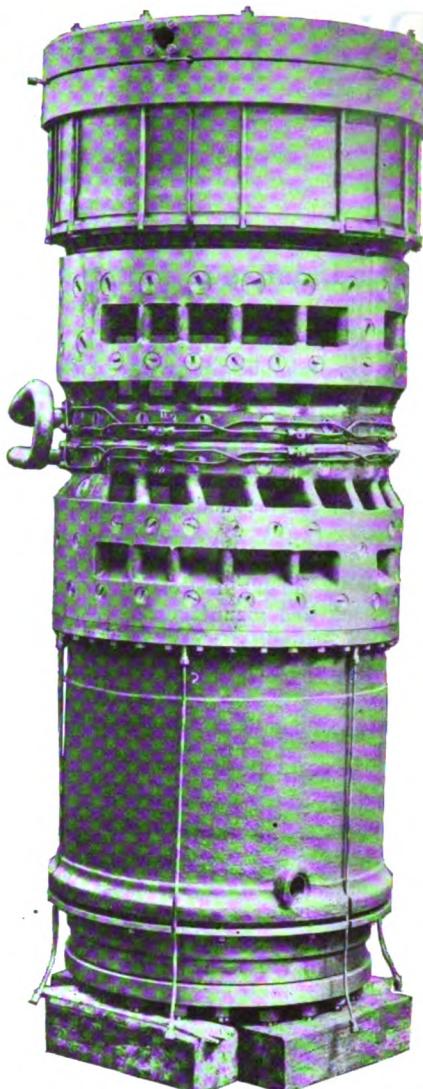


FIG. 5—LINER, SHOWING METHOD OF LUBRICATION

even to include a double acting, 2-cycle motor for a sea-going vessel. Submarine engines, of course, were in great demand during the war period. The M. A. N. 4-cycle submarine engine became the standard diesel engine for this purpose in the Germany navy.

Builds Largest Engine

Of the many notable achievements in the interesting evolution of the M. A. N. company, was the building, at the invitation of the German admiralty of a 12,000 horsepower diesel engine, eight cylinders, double acting, 2-cycle. This engine was completed and it passed the very rigid German admiralty requirements shortly before the armistice. The details of this engine have been discussed in certain of the technical papers and, therefore, can be passed over quickly at this time. It might be pointed out, however, that this engine was and is considerably the largest diesel engine that has ever been laid down and completed.

The M. A. N. development has been

predicated upon intensive research work in their laboratories from the very beginning, and this condition still exists at Augsburg. In their large experimental department, one will find running all types of diesel engine cylinders of the various systems, that is, both single and double acting, 4 and 2-cycle engines. The latest development, which has been running since last fall, has been a large cylinder of 1550 horsepower, double acting, 2-cycle, conceived for larger power requirements. This engine, of course, reflects their many years as builders and the previous trials as regards both double acting, 4 and 2-cycle engines.

Much of the success of the M. A. N. company can be attributed to the design, building and research work of their splendid engineering staff. And just as a matter of interest, it can be pointed out that there are many men at Augsburg who have spent their entire time since leaving college, almost 30 years, with diesel engine problems.

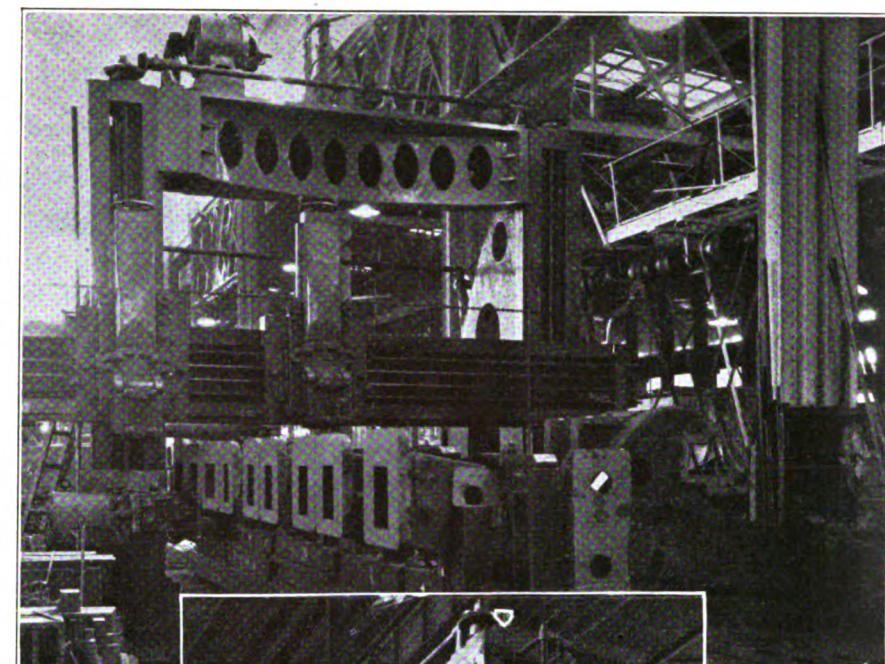
Despite the fact that M. A. N. has built upward of a million horsepower of diesel engines in its own enormous workshops, it serves in a dual capacity in that it has licensed world famous German shipyards, where many of the internationally well known ships have been built. The following shipyards are licensees of M. A. N.: Bloom & Voss, Weser at Bremen, Tecklenborg, Vulcan at Hamburg and Stettin.

Record of Hamilton Plant

The Hooven, Owens, Rentschler Co. at Hamilton, O., established in 1845, has had a development quite similar in many ways to that of the M. A. N. company. Both companies were formed at about the same time. The H. O. R. company in the beginning manufactured saw-mill machinery and then built a corliss engine, and now in its plants at Hamilton builds steam engines of all types for all purposes; gas engines; sugar machinery; plate glass machinery; rolling mill equipment, etc.

The Hamilton plant's contribution to shipbuilding is too well known for elaboration at length. As is generally known in shipping circles, during the recent war emergency, the Hamilton plant built four 2800 horsepower engines a week for the Emergency Fleet corporation. In addition, some seventy-seven 1400 horsepower engines were furnished and forty 750-horsepower engines.

Hamilton engineers have developed for marine purposes at sea, steam engines from 750 horsepower to 5000 horsepower, and various sizes of these engines figured prominently in the after-the-war development of the privately owned American merchant marine. The volume of this business can best be



Machine shop views in big engine building plant at Hamilton, O.

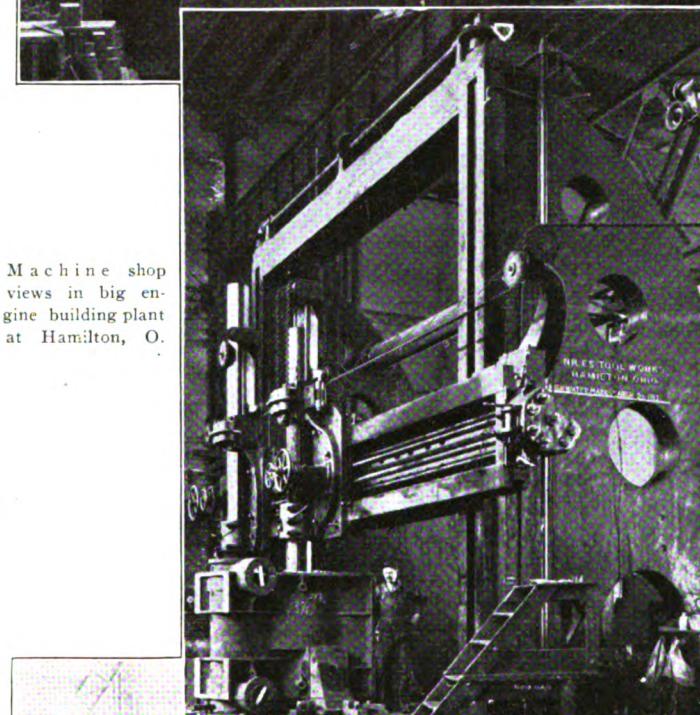
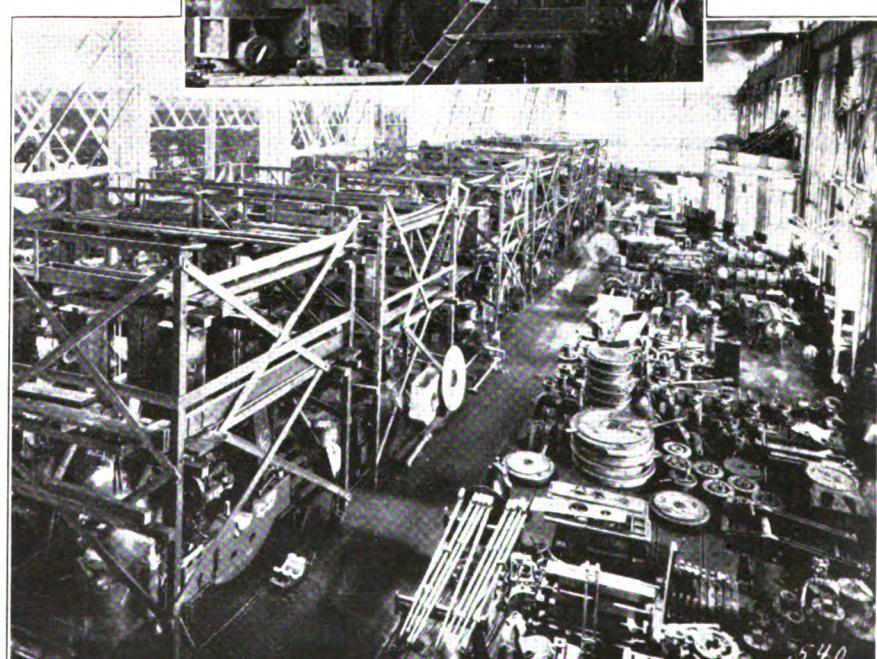


Fig. 6—Marine engine housings are planed on a massive side head planer as shown above. Fig. 7—Boring low pressure cylinder on vertical boring mill. Fig. 8—(below) general view of erecting floor.



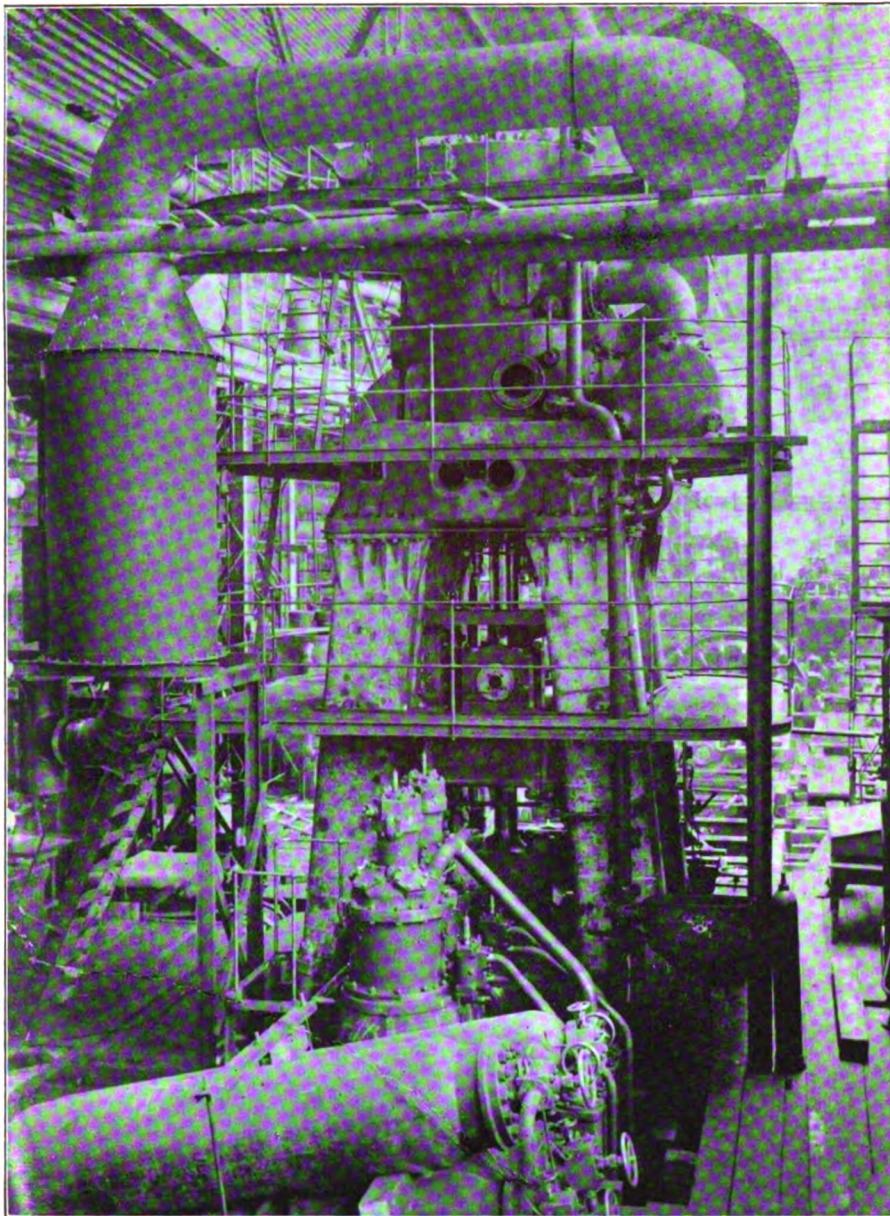


FIG. 9—EXPERIMENTAL CYLINDER OF 2-CYCLE, DOUBLE ACTING TYPE

judged from the Glasgow *Herald* returns of 1921, which reported that the Hooven, Owens, Rentschler Co. had built more horsepower of steam engines than any other building plant or shipyard in the world. Nineteen 3200 horsepower engines alone were built for tank purposes and are propelling tankers of The Standard Oil Co., (N. J.); The Standard Oil Co., (Cal.); The Texas Co., and other leading oil companies. A notable engine construction was for the seven tankers built in this country for the English firm, the Anglo-Saxon Petroleum Co. Another interesting engine from an engineering point of view is the 4000 horsepower quadruple expansion engine in the Southern Pacific Co.'s 16,000-ton tanker *TAMIAHUA*. Just recently, there have been certain notable passenger ship installations. A pair of 2000 horsepower each, vertical triple expansion engines

have been fitted in the Mallory liner *SAN JACINTO*. The Merchants & Miners Transportation Co.'s *ALLEGHANY* and *BERKSHIRE* are propelled by 2700 horsepower Hamilton 4-cylinder, triple expansion engines. And at the present time, for William Wrigley's new boat, the *CATALINA*, which will be commissioned early in the summer, two vertical triple expansion steam engines of 2250 horsepower each are being built. The Hamilton company has built more than a half million horsepower of steam engines for ships alone. The steam land installations aggregate over 5000 in number.

The Hamilton company's engineers have been closely in touch for a number of years with diesel activities in Europe, and some time ago, because of the years of experience behind certain European plants in their development of the diesel engine, it was decided that a close work-

ing alliance of American and European engineers, who had spent their lives studying and building diesel engines, would result in the development of an engine most favorably adapted to American conditions.

The close working arrangement between the Hamilton company and the M. A. N. company is so provided that the Hamilton plant can take care of any power requirements for sea or land.

Details of Engine

Fig. 1 shows the cross section through the cylinder and through the compressor of a 4-cycle, single acting M. A. N. marine type diesel motor which represents the most modern design of the M. A. N. engine. The construction of the framing has been made with the minimum weight giving the necessary strength and rigidity. Through bolts from the cylinder to the bottom of the bed plate are used for taking the tensile strength.

The framing is entirely enclosed and the water circulation through the piston is accomplished through telescopic piping with stuffing box outside of the frame so as to eliminate any possibility of leakage of water into the crank case.

The cylinder head has a divided water space, the lower part absorbing the intense heat from the explosions and protecting the larger part of the cylinder head against excessive heat.

The compressor is arranged in the middle of the engine and driven by toggle motion from the crank pin. This arrangement has been adopted to eliminate the objectionable beam arrangement. The camshaft is driven through cut gears and bevel gears by a vertical shaft and is located on top of the cylinder heads.

These engines are built in sizes from 1000 to 2000 brake horsepower with speeds from 95 to 120 revolutions per minute.

The cylinder, Fig. 2, is made in one piece and is fitted into the entablature. It is attached to the entablature by through bolts from top of the cylinder to the bottom of the entablature. The cylinders have the necessary openings for the inlet and outlet of the scavenging air.

The cylinder head is made in two parts. The inner part is held to the cylinder by flanges on the outer cylinder head, which again is bolted to the cylinder. This arrangement eliminates any undue strains due to expansion. The cylinder head has the divided cooling space as adopted by the M. A. N. company for all large engines regardless of type.

Fig. 3 illustrates a section of a 2-cycle, single acting M. A. N. marine type diesel engine. The scavenging arrangement as indicated by arrows through the cyl-

inder is of the company's latest design.

The inlet air enters through a row of ports at the lower part of the cylinder and is deflected against the piston so as to completely scavenge the cylinder. It escapes through ports located directly above and on the same side of the inlet ports.

This scavenging arrangement is the result of exhaustive experiments which have been carried on by the M. A. N. company during several years to obtain the nearest to perfect scavenging.

The feature of divided cylinder head for cooling is incorporated and in this 2-cycle design gives a simple cylinder head casting, eliminating excessive strains on any part of the casting.

Cooling the Piston

The piston cooling is accomplished with telescopic piping arranged with stuffing boxes outside the frame thus protecting the lubricating oil against any leakage of cooling water. The frame structure is reinforced by through bolts from the cylinder head through the bottom of the bed plate.

The engines are built in sizes from 1200 to 3000 brake horsepower at speeds from 85 to 100 revolutions per minute.

The piston, Fig. 4, is made in three parts. The upper and lower half is connected by a tie piece. The piston rod is hollow and through telescopic pipes the water is circulated through the rod to the piston.

Fig. 5 illustrates the liner which is made in halves and held in place by the cylinder head, thus allowing freedom of expansion. The liner is carefully water jacketed at all points and the upper and lower part are connected by an expansion joint. The parts of the liner subject to the greatest heat have circular ribs so as to give the greatest radiating capacity and the velocity of the water is increased in the parts subjected to the greatest heat.

Due to the great heat transfer in the 2-cycle, double acting engine the cooling is one of the most essential and can only be solved by thorough experiments such as the M. A. N. company have had opportunity to conduct in the engines which have already been built and which have proved entirely satisfactory.

The lubrication of the piston is also of the greatest importance and the many small pumps shown on the picture indicate the many points of admission of lubricating oil.

Fig. 9 shows an experimental cylinder erected in the Augsburg plant of the M. A. N. company. The cylinder is of the 2-cycle, double acting type of 31½ inches diameter and 41½ inches stroke, developing 1000 to 1200 brake horsepower at speeds from 90 to 110 revolutions per minute. In this development,

the cylinder is fitted with port scavenging of the same design as has been adopted by the M. A. N. company for the 2-cycle engine. This engine was finished last fall and has been given thorough tests for several months. It has proved eminently satisfactory in every respect and lays the foundation for large horsepowers in diesel engines.

This success is no doubt due to the long experience the M. A. N. company has had in the past and particularly the experience gained in the building of the large 2-cycle double acting engine of 12,000 horsepower.

The experimental engine was fitted with air injection but further exper-

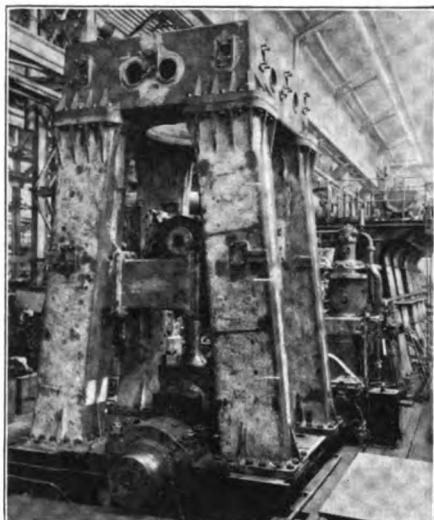


FIG. 10—CONSTRUCTION OF FRAMING, BED PLATE AND ENTABLATURE

ments are being made with solid injection, which, if successful, will result in the greatest attainment in diesel engines of horsepower per cylinder and simplification of design.

Fig. 10 shows the construction of framing, bed plate and entablature on top of frame for receiving the cylinders. The double acting engine naturally has to have a substructure capable of absorbing the load to eliminate vibration and deflection and tie bolts in connection with substantial cast iron framing ties the bed plates to the entablature in a rigid manner.

Furness, Withy & Co., operating berth steamship service between north Pacific ports and Great Britain, have opened offices at Seattle and Portland. The Seattle office is now in charge of Keith G. Fisken and Harold W. Burchard, well known young shipping men. David J. Fraser, for 14 years manager of the marine department of Balfour, Guthrie & Co., has assumed charge of the Furness Portland branch. Mr. Fisken resigned as traffic manager of the Royal Mail line.

Tells How to Order Brass Products

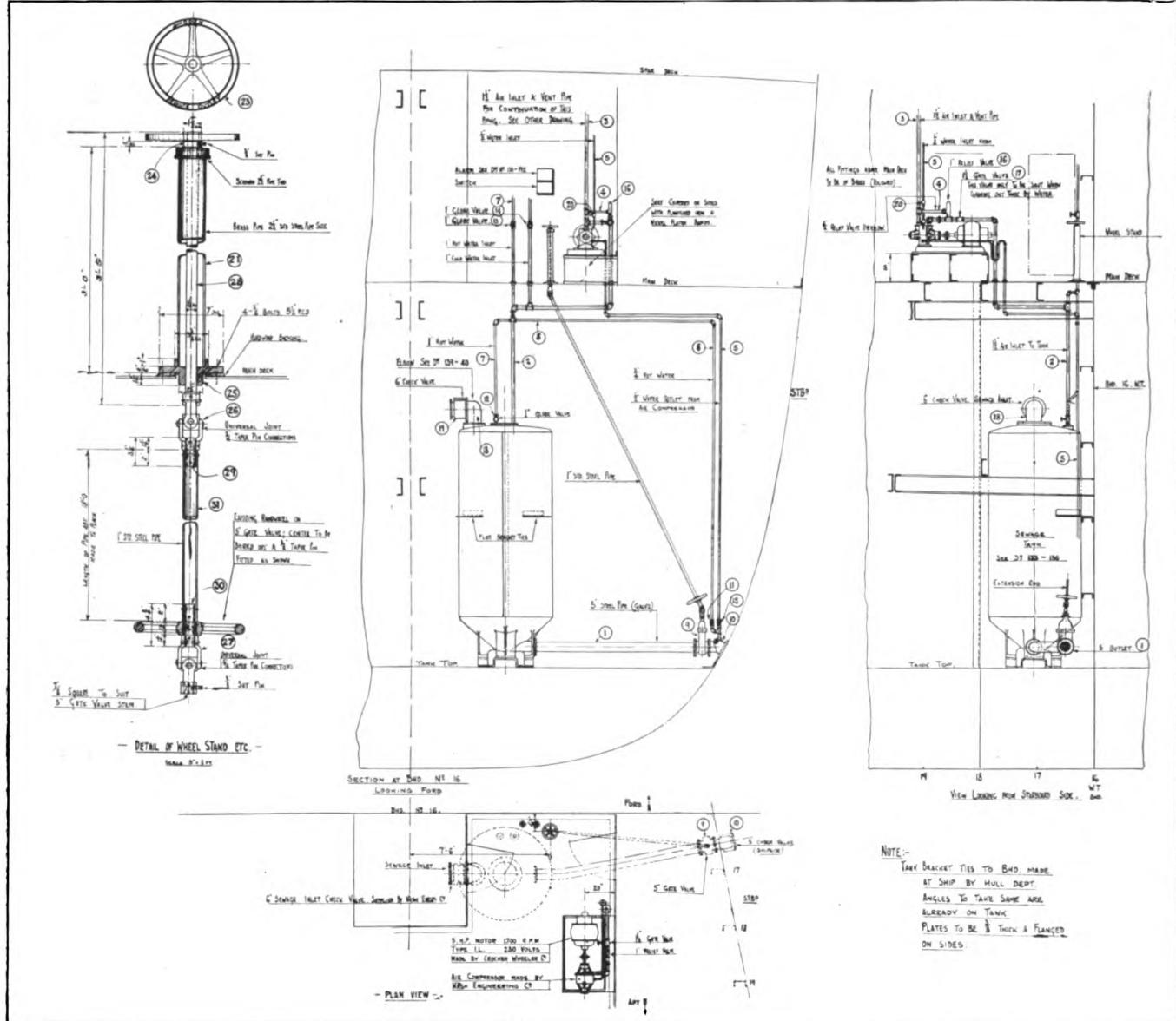
The Chase Metal Works, Waterbury, Conn., has recently issued a new booklet entitled "How to Order Brass." This booklet gives those using brass products the underlying principles governing methods leading to the manufacture of such products. The booklet tells what properties in brass are desirable for certain typical uses, also, how to order such material so that the manufacturer will understand what is wanted.

A clear understanding on the part of the manufacturer of what the requirements are will result in the saving of time, money and trouble. Specifically, this booklet discusses the advisability of the user informing the manufacturer of that particular characteristic which he needs in his use of brass. The question of tempers of brass is explained thoroughly. Tolerances for different brass products are also given definitely in tables. This should be of considerable importance to the user as he can then tell definitely how much over and under in dimensions is practicable. Altogether, this booklet is an interesting and useful addition to literature on brass and will be found helpful by all those responsible in the marine field, and other fields, for ordering brass products.

The Norwegian steamship BALTO has arrived at Portland after a voyage to the Orient filled with ill luck. On her outward voyage, the freighter encountered terrific storms causing damage and delay. In the Orient two members of the crew were killed in accidents. In Yokohama harbor, she almost went aground because of a misplaced light. On the return across the Pacific, the BALTO lost her propeller and drifted for 15 days before being picked up by an American steamer and towed into Honolulu for repairs.

Terminals of the port of Seattle are handling an increased amount of cargo as compared with the same period last year. Freight now in storage at the public piers includes 12,000,000 feet of lumber, 250,000 bushels of grain, 70,000 boxes of apples, 5000 barrels of berries, 200,000 pounds of reindeer meat from Alaska, 2,000,000 pounds of shelled nuts and 1,250,000 pounds of fish in cold storage.

The DONORA, a new towboat for the American Steel & Wire Co., launched in April at the Howard Shipyard & Dock Co., yard at Jeffersonville, Ind., is 165 x 32 feet, and draws 6 feet. She will be used for towing at the various plants of the wire company near Pittsburgh.



Sewage system on New Ford motorship is designed on original lines

Big Motorship for Henry Ford-II

BY J. C. WORKMAN
Chief Engineer, American Shipbuilding Co.

THE ballast system of the new lake motorship, HENRY FORD II, building for the iron ore and coal trade by the Ford Motor Co., is probably the most elaborate ever installed on a lake ore carrier. The pump equipment has two main ballast pumps located near the center of the engine room, in front of the manifold as shown in the illustration. These pumps are double centrifugal type, capacity 7000 gallons per minute, each pump, and driven by a 75 horsepower motor.

There are two auxiliary ballast or drainage pumps, capacity 2500 gallons per minute, each pump being located at

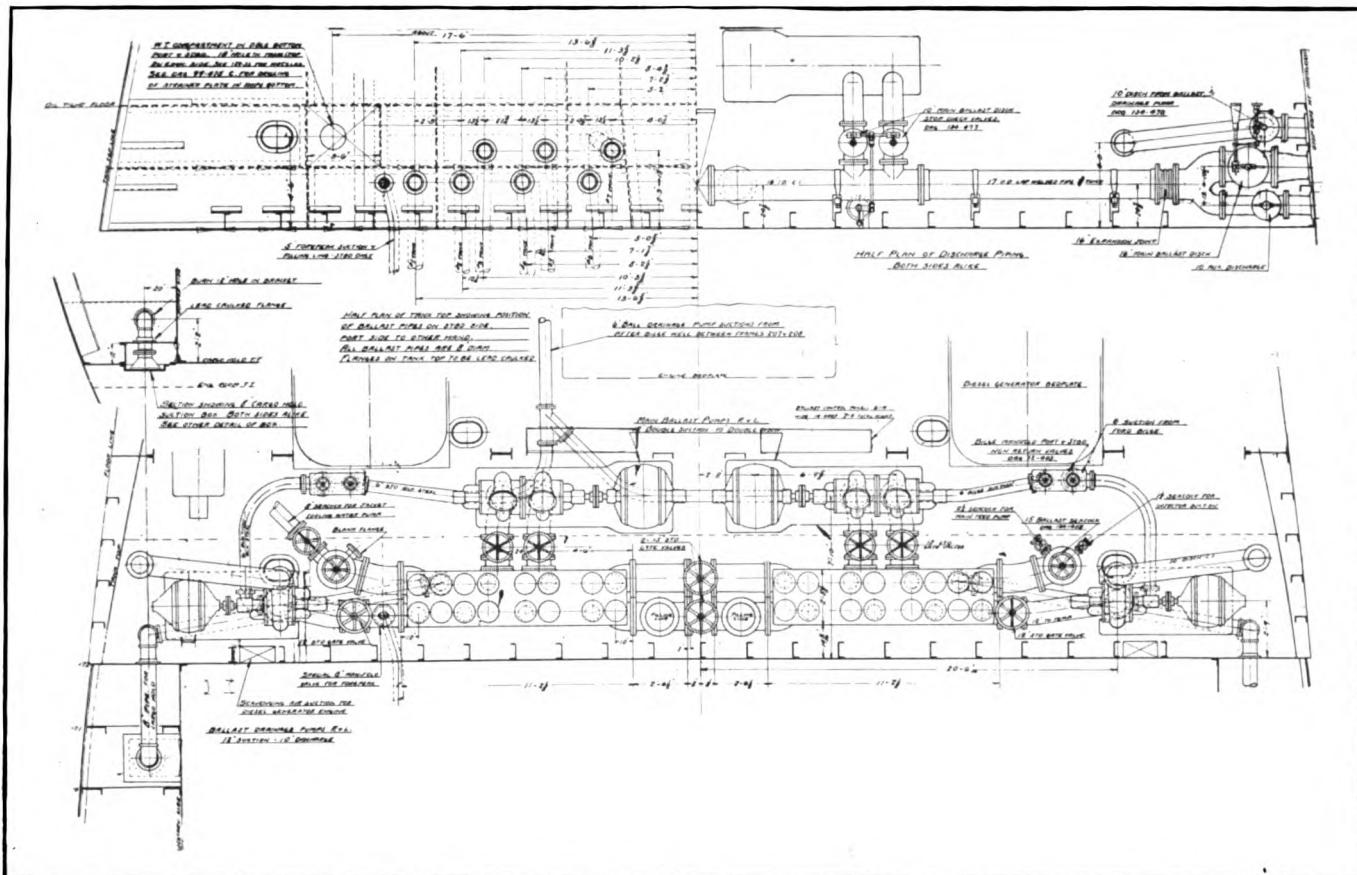
Follow the Complete Ford Series

THIS is the second article in the Ford motorship series and covers the ballast and sewage systems, unusual in lake practice. The first article last month gave complete details on the hull and general features of these interesting ships. Later articles will describe the engines and prospective service. Owners, builders and engineers will find the series of real value.

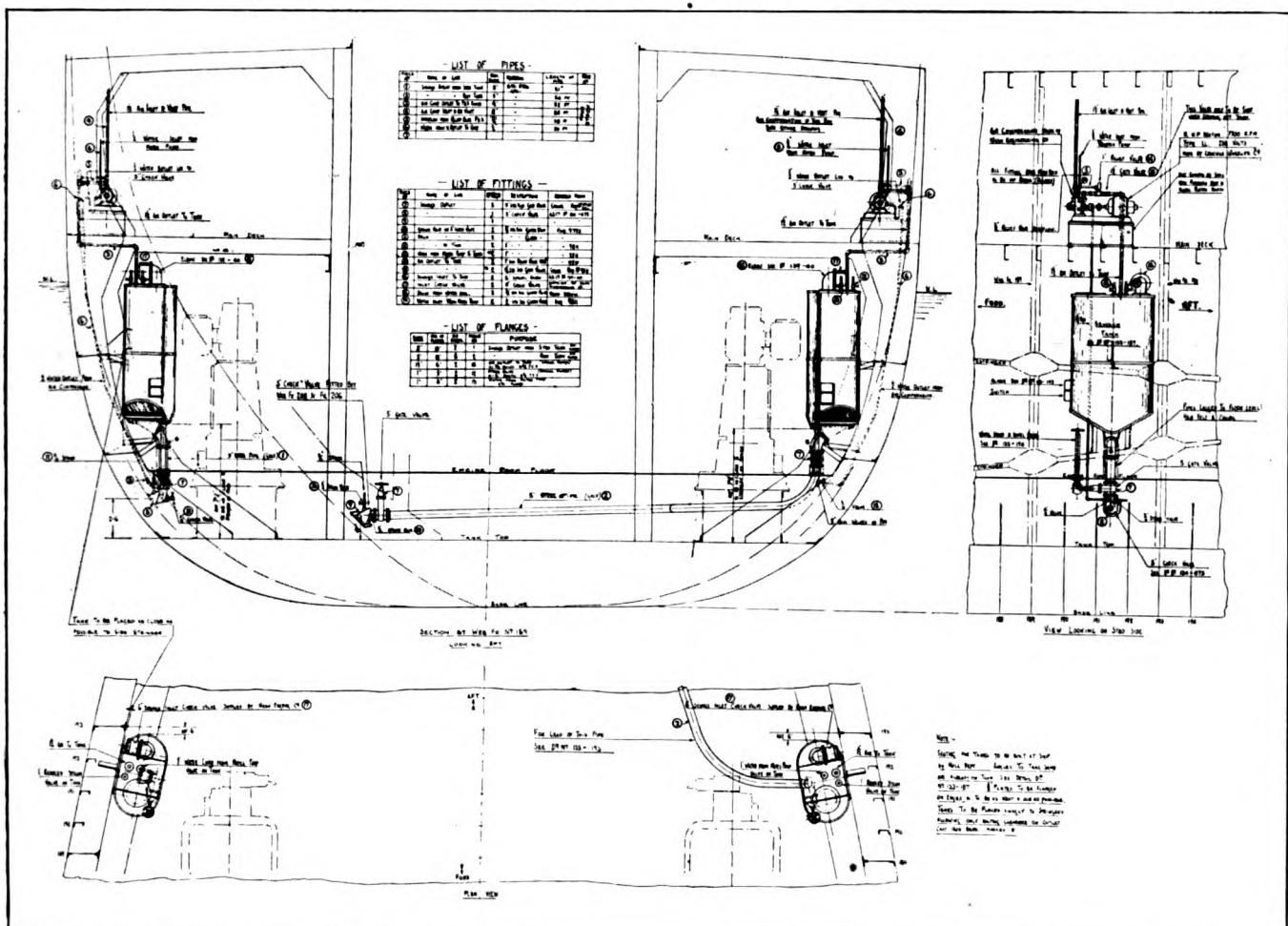
the end of manifolds, port and starboard sides.

These ballast pumps are primed by means of two additional Nash Hytor air pumps as illustrated, each driven by a 20-horsepower motor. By this method, the ballast pumps are always under vacuum of 18-20 inches. They can not lose their suction lift and should be a great step in advance over the present systems.

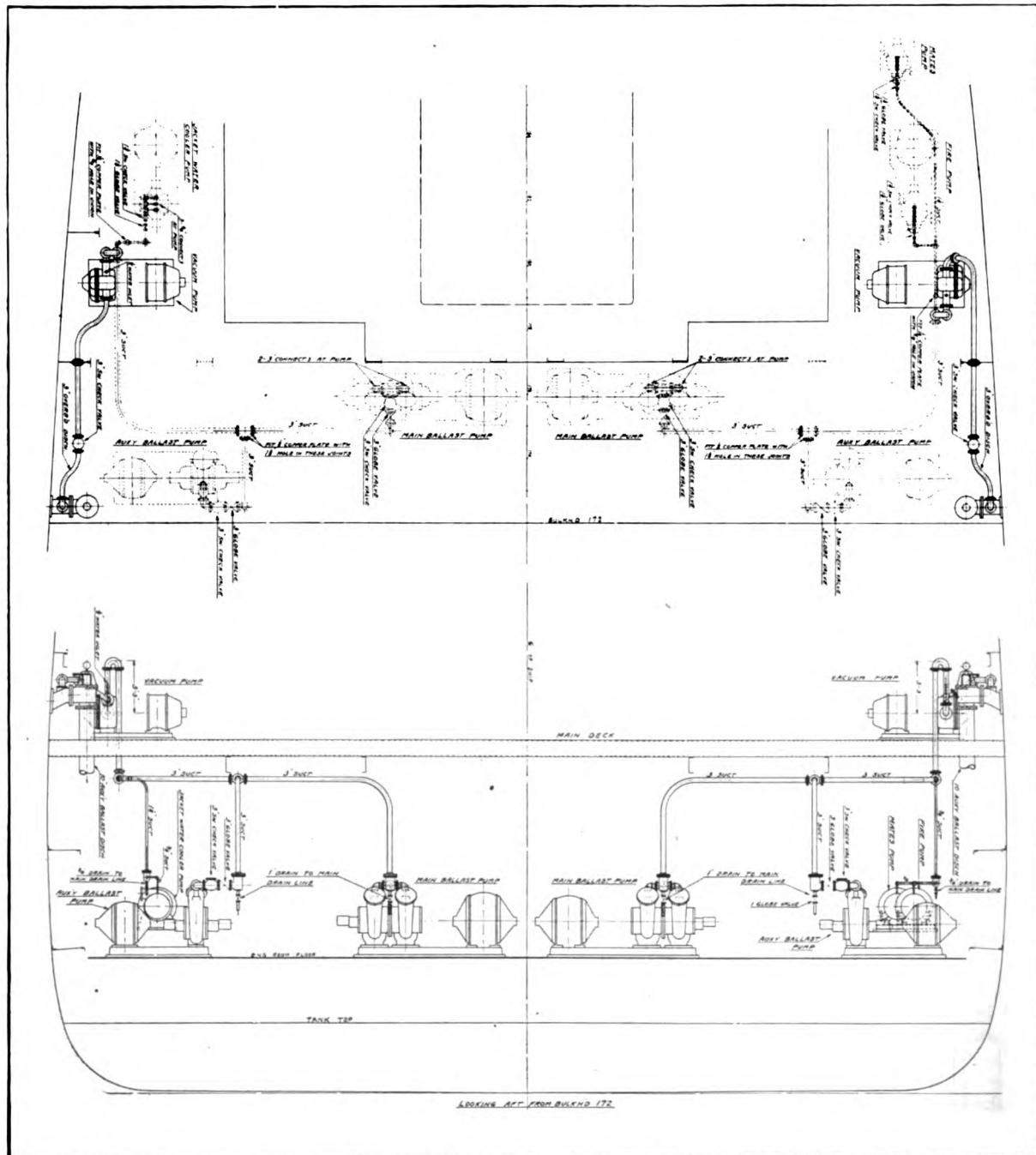
The pumps are connected to a double cast-iron manifold, which has fourteen 8-inch connections to the double water bottoms, and one 5-inch connection to fore peak. This manifold is so arranged



PLAN VIEW OF BALLAST SYSTEM ARRANGEMENT



CROSS SECTIONAL VIEW SHOWING ORIGINAL DESIGN FOR SEWAGE SYSTEM



MOTORDRIVEN AIR PUMPS MAINTAIN VACUUM OF 18 to 20 INCHES IN BALLAST PUMPS

that any compartment can be pumped from and into any other at will, and is of great advantage in trimming ship.

In addition to the 14 compartments under cargo holds, there are two compartments under engine room used for the storage of fuel oil, each holding 100 tons.

These tanks are connected to the fuel oil transfer pump which distributes to the daily supply tanks in the upper engine room.

The total amount of water ballast is 7390 short tons and arrangements are made so that the main cargo hold can be flooded and pumped out by means of two additional 8-inch connections connected to manifold system.

The discharge pipes from main bal-

last pumps overboard are 17-inch diameter and at each side near discharge they have a copper Wainwright bellows connection to take care of expansion. All the flanges of valves and connections are finished bright and pipes themselves are filled and enameled. The ballast pumps are of the Union Steam Pump Co. make, and the motors, Crocker-Wheeler Co.

Sewage System

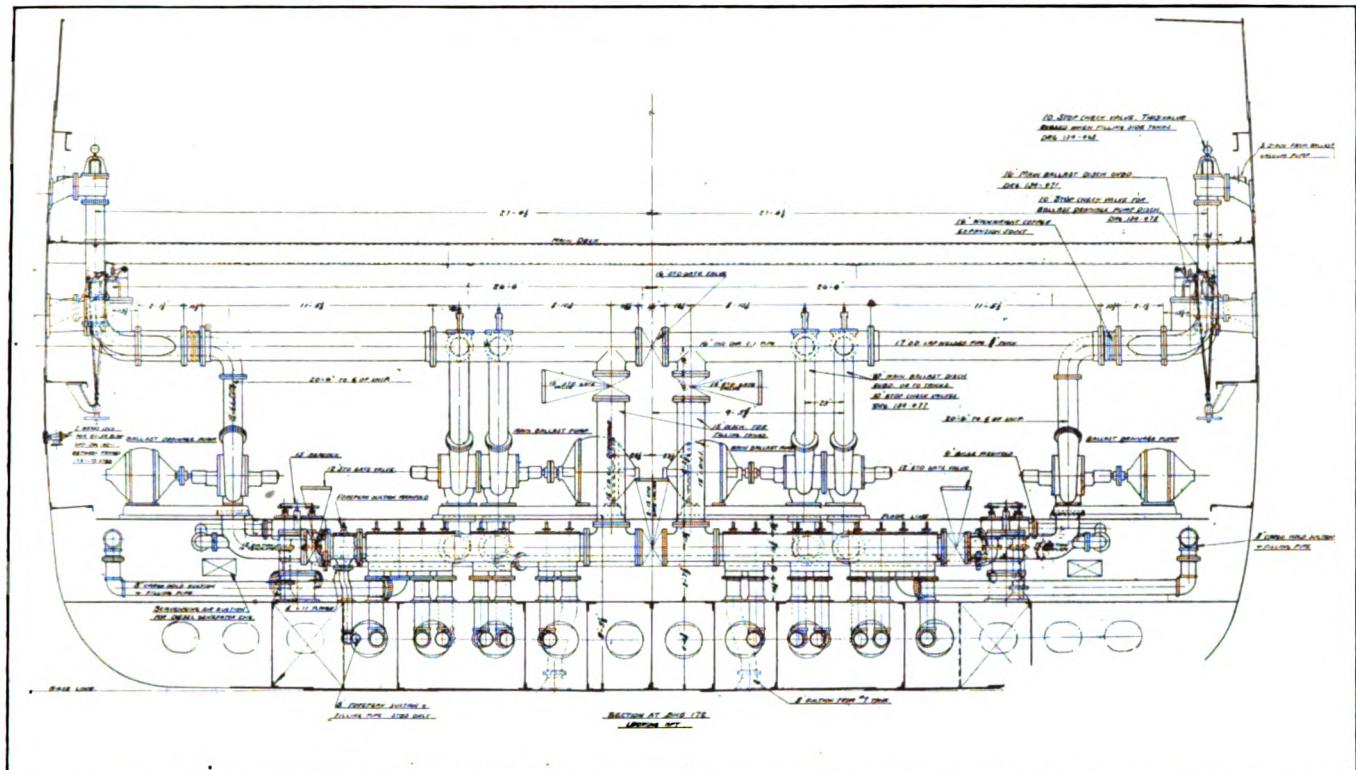
The entire water ballast should be discharged with pumps operating full capacity, in about two hours. There will be some losses due to drainage back to pumps but we think the ballast should be discharged inside of three hours which will be a considerable improvement over

usual time with this class of vessel.

An entirely new system of disposing of the ship refuse was decided on for the new Ford motorship, the HENRY FORD II. It is taken care of in the most efficient and sanitary way possible.

The system discharges at about the 5-foot water line on the starboard side of the ship only, all the sanitary and drinking water inlet being on the port side of vessel.

The after arrangement has two tanks of 700 gallons each; one arranged on the port and one on the starboard side of ship. The two-tank arrangement aft was used in order to simplify the lead of soil pipes to the tanks from cabins above, and save carrying all these numerous connections across the ship.



TWO MAIN BALLAST PUMPS ARE LOCATED NEAR CENTER OF ENGINE ROOM.

Tanks are discharged by means of Nash motor-driven compressors which supply about 20 pounds pressure on line. These tanks are capable of taking care of all sewage in port for a few days' stay. Alarm bells operated by floats are fitted to notify engineers when tanks are full. Forward cabins are taken care of by one tank of 1000 gallons capacity, located in dark hold, using the same system as the after end for discharging overboard.

The tanks are neatly covered with

planished steel and nickel-plated bands, so are in no way objectionable in engine room equipment.

Ocean Exhibits Feature British Exposition

Owing to the importance of sea transport in the economy of the British commonwealth of nations, maritime exhibits constitute an important feature of the British Empire exhibition which opened in London, April 23. The exhibition as a whole is one of the largest ever held, covering an area of 216 acres, and representing an investment of nearly \$50,000,000. The resources and industries of all the British dominions and colonies are fully represented.

A special section of the exhibition is devoted to water transport. Among the exhibitors in this section are the principal British steamship companies, dock companies, etc., all of whom are showing numerous models of ships, drydocks, canals, locks, etc. Shipbuilding methods and materials are exhibited in the palace of engineering. The whole range of the British shipbuilding industry is comprehensively displayed. This portion of the exhibition includes a complete display of the different types of prime movers for ships, enabling the visitor to compare the relative possibilities of steam, diesel and electric drive.

A part of the British government's exhibit includes a pond on which work-

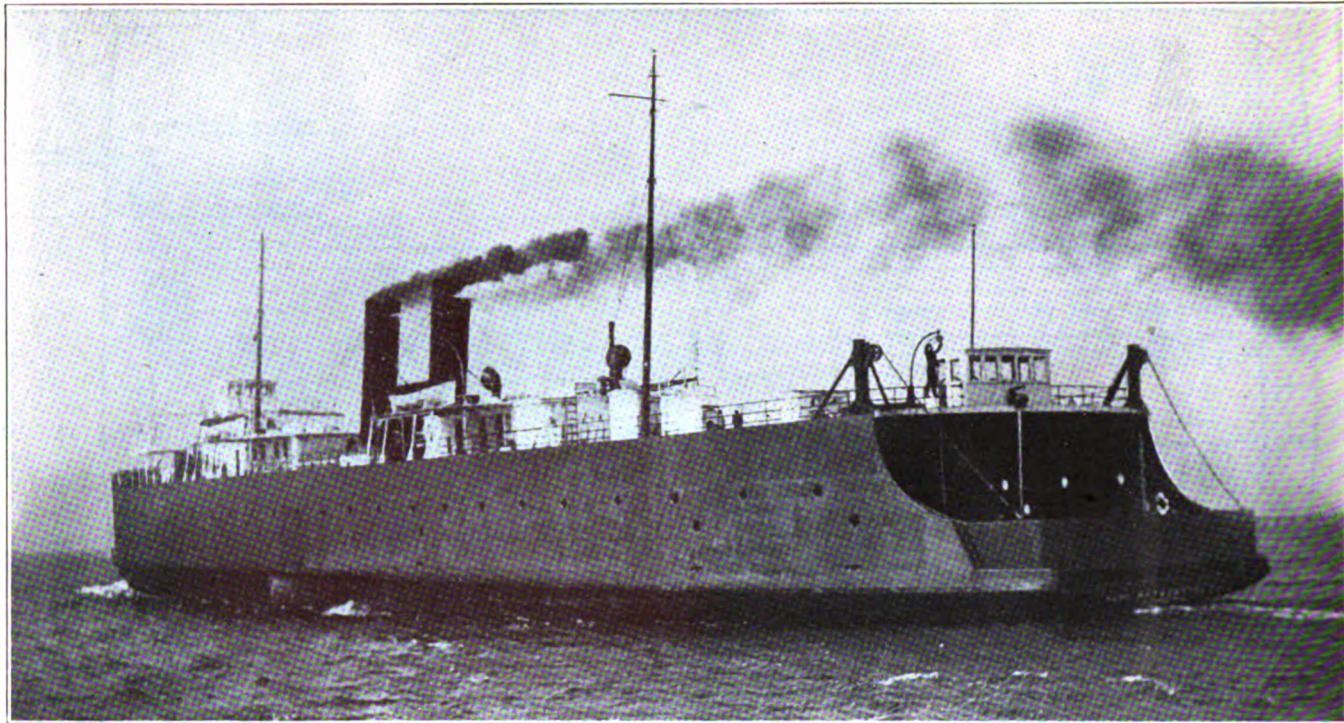
ing models of various types of vessels are in operation. This pond will also be used to reproduce historic British naval actions in miniature. A huge relief map of the world, 20 feet wide and 40 feet long has also been provided by the British government to illustrate the ocean trade routes on which the British empire depends for its industrial prosperity. This map is set under water and so arranged that miniature model ships are seen in operation on main ocean highways.



GUNNAR C. ENGSTRAND
Specialist in drydock design, member new firm
of Armstrong & Engstrand



C. A. G. ARMSTRONG
Specialist in drydock construction, member new
firm of Armstrong & Engstrand



Powerful Pere Marquette Car Ferry No. 19 which runs in Lake Michigan service

Trials Show Superheat Saves Fuel

HERMAL efficiency is increased by the use of superheated steam. This general statement applies wherever the power plant may be located, whether ashore or on board ship, and to both reciprocating engines and steam turbines. Increase in thermal efficiency means greater economy in steam consumption and consequently the use of less fuel for the same power. Since fuel represents the largest single item of expense in the operation of a steam vessel, a reduction in this item affects in a larger measure the total cost of operation than a proportionate reduction in any other item. All successful steamship operators watch the fuel bill and are ready to consider, with the greatest care, ways and means of reducing it.

Here and there opinions are still expressed showing doubt as to the efficacy of superheated steam, particularly for reciprocating engines in marine installations. Such opinions are not based on experience with present day installations of the best modern types of superheaters, in properly operated plants. Engineering skill and experience of the highest order, both practical and technical, is now available for the study of any plant, with regard to the advisability of, and advantages to be gained by, the use of superheat. This is of the utmost importance, as ill advised application of superheat

should be carefully avoided. Guarantees within certain limits of the saving which may be expected and the representations made in regard to the life and upkeep cost of the superheater elements, are now freely given by the leading manufacturers.

Actual performance records with and without superheat, being in the nature of concrete evidence which can not be denied and which can be verified from unbiased sources, is after all the most convincing proof of the value of superheat. In the April 1923 issue of MARINE REVIEW, a comparison was given of the performance of 20 similar freight steamships of the Nippon Yusen Kaisha, over a period of two years. Ten of these ships operated with high degree fire tube superheaters and ten with saturated steam. The results showed a saving of 27,124 tons for a total mileage of 855,345 for the superheated ships, or a saving in fuel for the same mileage of 16.8 per cent over that for the nonsuperheated ships. Nearly all of the above ships have triple expansion reciprocating engines.

A further practical example of increased economy in fuel as a result of the application of high degree superheat may be noted in the case of the Pere Marquette Railway Co., car ferry No. 19, fitted with superheaters by the Superheater Co., 17 East Forty-second street, New York. The accompanying

illustrations show this car ferry on Lake Michigan. Built in 1903, car ferry No. 19 is equipped with twin screw, triple expansion, reciprocating engines and four single ended Scotch boilers operated under natural draft. In 1923, fire tube superheaters designed to raise the temperature of the steam at 175 pounds boiler pressure to 575 degrees at the throttle, were installed. As the temperature of saturated steam at 175 pounds pressure is 377.5 degrees Fahr., this would mean a maximum superheat of 197.5 degrees Fahr. This car ferry operates for the greater part of the year on three boilers at an average speed of 12 miles per hour.

After the superheaters were installed in car ferry No. 19, the railroad wishing to determine in a quantitative way the saving in fuel due to superheat, kept a record by carefully weighing the coal used during the month of November on this ferry and on car ferry No. 20, similar in every respect, except for superheat. Reports of this test show that car ferry No. 19, with superheat, used 15 per cent less fuel during the month than car ferry No. 20, without superheat. The average temperature carried at the throttle is 550 degrees Fahr., which amounts to 172.5 degrees Fahr. of superheat for a boiler pressure of 175 pounds.

In May, 1918, the Superheater Co. in conjunction with the Pere Marquette



LAKE CAR FERRY OF THE PERE MARQUETTE RAILROAD WHICH HAS BEEN GIVEN SUPERHEAT EQUIPMENT AS A MEANS OF OBTAINING GREATER FUEL ECONOMY

Railway Co. conducted a performance test on car ferry No. 19 long before superheaters were installed. Again in November, 1923, after superheaters were installed, another performance test was conducted on this car ferry with engines running with the same cutoff and all other conditions as nearly identical as possible. The results of these two tests are reported as follows:

Condition	Saturated	Superheated
Date	May, 1918	Nov. 1923
Vessel	Car Ferry	Car Ferry
No. 19	No. 19	
Coal used, analyzed,		
B.t.u.	12,423	12,012
I. H. P.	1667	1645
Speed, statute miles per hour	12.12	12.04
Coal used per hour, pounds	4460	3842
Coal per I. H. P., pounds	2.68	2.34
Average loading, tons	1015	1048
Saving in fuel per cent		13.85

On the basis of fuel to move one ton one mile, from the data given above for each trial trip, 0.362 pounds were used when this car ferry operated under saturated steam and 0.302 pounds when operating with superheat, or a saving in fuel of 16.56 per cent. This is without taking into consideration the greater heating value of the coal used on the saturated trial, as indicated by the greater B.t.u. as per analysis of samples. Nor is any difference in weather conditions, likely to be more favorable in May than in November,

especially on the Great Lakes, taken into account.

Allowing the slight difference in speed and loadings on the two trials to offset one another and considering only the amount of fuel used per hour, the test under superheated condition shows a saving of 13.85 per cent in fuel. From the above, it would seem to be amply justified to say that superheat in this instance means a saving of from 13 to 17 per cent in fuel used for equivalent service.

The successful application of superheat on this ferry, built 21 years ago, again demonstrates what has been shown time and again in numerous installations, that superheat can be used greatly to improve economy for either reciprocating steam engines or steam turbines, provided always that a competent preliminary study is made of the existing plant to establish the practicability of such installation in each particular instance. A saving is certain to result and no trouble in operation will be experienced if such a procedure is followed.

Formerly the American schooner LEVI W. OSTRANDER, the TSING TAI has returned from China waters after an exciting cruise. The vessel was built in Tacoma during the war and a year ago went to China where she was sold and placed under the Chinese flag. Several months ago she was abandoned by her crew off the China coast and later picked up and towed into port under a salvage claim. The TSING TAI loaded a cargo of lumber for Shanghai.

Recalls Law Against Discharging Ashes

Attention is invited by E. M. Markham, district army engineer, Detroit, to the act of congress of March 3, 1899, making it unlawful to obstruct or impede navigation in the navigable waters of the United States by the dumping of refuse therein. Under this law, dumping ashes from vessels in any of the improved harbors or channels of the Great Lakes or connecting waters is absolutely prohibited.

Colonel Markham states "the results of violation of this law are clearly observable in that maintenance dredging operations show frequently the presence of a material quantity of cinder and ashes. Accordingly, this notice is promulgated to the end that all masters and engine room forces be instructed against the practice which may have heretofore obtained, and be advised of the purpose of a closer future supervision with invocation of the pertinent law upon evidence of further violation."

Vancouver, B. C., despite lack of loading and terminal facilities, has taken the lead among north Pacific ports in the export of grain. From September, 1923 to April 1, 1924, Vancouver dispatched 176 ships with full cargoes for foreign ports, totaling more than 35,000,000 bushels. Construction of elevators and loading facilities, now under way, is expected to give shipping much better dispatch during the coming season. By fall 11 berths are planned.

Use Automatic Steering Device on More Ships

The Sperry gyro-pilot (automatic steering device) has met service conditions so that an order has been placed for equipping the remainder of the shipping board passenger liners. New installations are on the PRESIDENT LINCOLN, operated from San Francisco to the Orient by the Pacific Mail Steamship Co., and the PRESIDENT GRANT of the Admiral Oriental line.

The PRESIDENT HARDING and the REPUBLIC of the United States lines recently sailed automatically steered, and

the WESTERN WORLD of the Munson line has just been fitted. She will be the first ship to visit South America without a man at the wheel.

Installation has just been completed of a gyro-compass and a gyro-pilot on the tanker HARVESTER of the Texas Co. and the MATSONIA of the Matson line, plying between San Francisco and the Hawaiian islands. Reports from abroad show that a number of the diesel freighters building in England for service out to the Far East and Australia will also have the gyro-compass and gyro-pilot.

Ten 14-inch, 45-caliber battleship guns

were part of an unusual cargo on the Williams freighter WILLIHO. The guns were loaded at the Puget sound navy yard, being taken from the dreadnaught OKLAHOMA. They were consigned to the Norfolk navy yard for relining. The guns weigh 145,000 pounds each and are valued at \$100,000 each.

Inaugurating a new feature aboard ship, the Pacific Steamship Co. has established the daily "children's hour." Hereafter when the grown ups are enjoying afternoon tea aboard the company's passenger liners, the little ones will be entertained with fairy stories by the nurses.

Ocean Freight Rates

Per 100 Pounds Unless Otherwise Stated

Quotations Corrected to May 8, 1924, on Future Loadings

NOTE: FREIGHT RATES HAVE HELD STEADY OR ADVANCED.

New York to	Grain	Provisions	Cotton (H. D.)	Flour	General cargo cu. ft.	100 lbs.	††Finished steel	REMARKS	From North Pacific Ports to	Lumber Per m. ft.
Liverpool....	2s 6d‡	\$0.50	\$0.30	\$0.21	\$0.40	\$0.75	\$7.00T	Fair	San Francisco.....	\$5.50 to 6.00
London.....	2s 6d‡	0.50	0.25	0.22	0.40	0.75	7.00T	Poor	South California.....	6.00 to 6.50
Christiania....	\$0.22	0.45	0.40	0.27	0.42½	0.85	8.00T	Good	Hawaiian Islands.....	10.00 to 10.50
Copenhagen....	0.22	0.45	0.40	0.26	0.42½	0.85	8.00T	Very Good	New Zealand.....	15.00 to 16.00
Hamburg....	0.16	0.35	0.32½	0.22	0.37½	0.75	8.00T	Fair	Sydney.....	13.00 to 14.00
Bremen.....	0.12	0.35	0.35	0.22	0.37½	0.75	8.00T	Very Good	Melbourne-Adelaide....	13.50 to 14.50
Rotterdam and Amsterdam....	0.15	0.32½	0.30	0.21	0.35	0.70	7.50T	Very Good	Oriental Ports.....	8.00 to 10.00
Antwerp....	0.16	0.32½	0.30	0.21	0.35	0.70	7.00T	Fair	Oriental Ports (logs)....	13.00 to 15.00
Havre....	0.16	0.50	0.25	0.27½	0.40	0.75	8.00T	Good	Peru-Chile.....	13.00 to 15.00
Bordeaux....	0.16	0.50	0.25	0.27½	0.40	0.75	8.00T	Good	South Africa.....	18.00 to 19.00
Barcelona....	0.20 to 0.25	12.00T	0.30	10.00T	—12.00T—	—	10.00T	Fair	Cuba.....	13.00 to 14.00
Lisbon....	0.20	0.65	0.40	7.00T	—20.00T—	—	7.00T	Fair to Good	United Kingdom.....	80s to 90s
Marseilles....	0.17 to 0.18	0.55	0.50	5.60T	—20.00T—	—	5.00T	Fair	United Kingdom (ties)....	70s to 80s
Genoa.....	0.19	0.50	0.40	0.30	0.40	0.80	6.00T	Good	Baltimore-Boston range.....	\$13.00 to 16.00
Naples.....	0.19	0.50	0.40	0.30	0.40	0.80	6.00T	Fair	Baltimore-Boston range (ties).....	Not quoted
Constantinople	0.23	17.00T	0.75	0.32½	—20.00T—	—	9.00T	Quiet	Buenos Aires.....	14.00
Alexandria....	0.25	17.00T	0.75	0.32½	—20.00T—	—	9.00T	Improved	Flour and Wheat	
Algiers.....	0.20	0.75	0.75	0.30	—20.00T—	—	7.00T	Very Slow	Oriental Ports (net ton). \$4.00 to 5.00	
Dakar.....	14.50T	....	....	12.00T	—20.00T—	—	10.00T	Good	U. K. and Continent (gross ton).....	35s to 37s 6d
Capetown....	7.00 to 8.00T	10.00T	....	7.50T	—10.00T—	—	8.00T	Very Good	Mediterranean.....	37s 6d to 40s
Buenos Aires....	18.00 to 20.00T	....	....	18.00 to 20.00T†	7.00 to 7.70T	—	7.00T	Good		
Rio de Janeiro....	19.00 to 21.00T	....	....	7.00 to 7.70T	19.00 to 21.00T†	6.00 to 6.60T†	—	Fair		
Pernambuco....	22.00T	....	....	9.00T	—22.00T—†	—	8.60T†	Fair		
Havana....	0.22½ to 0.30*	0.42½*	....	0.22½*	0.54*	1.08*	0.20*	Fair		
Vera Cruz....	0.25	0.40	0.45	0.25	0.52½	1.05	0.30 to 0.35	Good		
Valparaiso....	1.07	....	....	0.70	0.45	0.80	10.00T	Fair		
San Francisco....	0.40 to 0.70	....	....	0.75 to 1.10	....	2.50	0.55 to 1.00	Good		
Sydney....	18.00T	2.50	18.00T	....	18.00-24.00T	9.00-12.00T	—	Good		
Calcutta....	16.00T	0.60	12.00T	....	—16.00T—	10.00T	—	Very Good		

T—Ton. †Per quarter of 480 lbs. †Landed. ††Heavy products limited in length. *Extra charge for wharfage.

Principal Rates To and From United Kingdom

Grain, River Plate to United Kingdom....	d	d
Coal, South Wales to Near East.....	13	3
Coal, United Kingdom to Hamburg.....	5	6
Manganese Ore, Poti to Philadelphia.....	\$4.00	

Bunker Prices

At New York

Coal alongside per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
April 11, 1923 \$6.75@7.50	\$1.76½	5.10@5.35c
July 11.....5.50@6.70	1.76½	4.40@4.50c
Oct. 11.....5.25@6.85	1.51½	4.00@4.50c
Jan. 9, 1924.....5.25@6.50	1.41½	4.63@5.42c
Mar. 8.....5.00@6.50	1.66½	5.15@5.50c
April 8.....4.50@6.50	1.66½	5.51c
May 8.....4.50@6.25	1.81½	6.00@6.50c

At Philadelphia

Coal alongside per ton	Fuel oil alongside per barrel	Diesel oil alongside per gallon
April 10, 1923 \$6.00@6.50	1.875	5.10 cents
July 9.....5.25@6.25	1.62@1.73	4.35@4.60c
Oct. 11.....5.00@5.50	1.36½@1.51	4.12@4.30c
Jan. 9, 1924.....4.90@5.70	1.415	3.86c
Mar. 7.....4.50@5.50	1.955	5.41@5.65c
April 8.....4.25@5.25	1.955	5.41@5.65c
May 8.....4.25@5.10	1.945	5.56@5.63c

Other Ports

Boston coal, per ton .	\$6.90
Boston, oil, f. a. b., per barrel	\$1.36
Hampton Roads, coal, per ton t.i.b.	@5.30
Cardiff, coal, per ton .	21s 6d
London, coal, per ton .	29s
Antwerp, coal, per ton .	27s

Electric Driven Ship Sets Service Record

Twice around the world and twice to Japan and back, a total distance of 100,000 miles without the slightest mishap to its electrical propulsion equipment despite the fact that on its last voyage the ship was at the mercy of a typhoon for six hours, is the record of the *ARCHER*, cargo carrier of the Barber line.

The only expense to the equipment since the turbine electric drive was installed by the General Electric Co., Schenectady, N. Y., in the fall of 1921 has been the renewal of brushes on one of the generators, a cost of but \$4. According to Capt. Berger E. Hansen, "the typhoon experience, when we rode waves as high as 60 and 70 feet and were at the mercy of a 150-mile gale, gave a test which few electric or other kinds of cargo ships have withstood. The big feature in this storm was the nonracing of the propeller. No matter where the propeller was, in the water or out, revolutions were the same.

"On the return trip, after leaving Ham-

burg, three of the four propeller blades were lost in one night due to ice in the ocean, but the *ARCHER* continued her trip to the Azores, a distance of 768 miles, at an average speed of 8.6 knots, with but the one blade.

"The electric drive without question saved us again. Without it the propeller would surely have raced at times so that the other blade would have been lost and then we would have had to be picked up and towed to some port," said Captain Hansen.

Bethlehem May Establish Honolulu Repair Plant

Bethlehem Shipbuilding Corp. may establish a ship repair and general iron and steel manufacturing plant, including a drydock, at Honolulu to cost about \$3,000,000. J. J. Tynan, vice president and general manager of the company's San Francisco plant, and P. J. Jurs, manager of the mine and dredging department, were in Hawaii recently looking over a site on Kalihi harbor. Engines and boilers would be built.

Describes Boiler Water Testing Outfit

Marine engineers will find interest in a pamphlet entitled "Treatment of Boiler Water" just published by the Babcock & Wilcox Co., 85 Liberty street, New York. This describes a new boiler water testing apparatus designed by that company and also contains a short but comprehensive treatise on the use of soda in combating corrosion and scale in marine boilers.

The new testing apparatus is an enlargement of the company's silver nitrate testing outfit, the addition to the original apparatus being a simple, quickly made and accurate alkalinity test. The information on the treatment of boiler water is of decided interest both to the engineer and to the owner who pays the repair bills consequent upon damages due to corrosion.

A wide distribution of this pamphlet has been made by the marine service department of the Babcock & Wilcox Co., with the hope that the information will prove of assistance to the operators of any and all types of marine boilers.

Marketing Lubricating Oil for Ships

To the Editor:

What methods are used to sell lubricating oil to ships and what is the approximate consumption of such oil in the marine field?

DIFFERENT large oil companies use slightly different methods but on the whole there is a great similarity apparent in their manner of marketing lubricating oil for ship use.

1.—They of course advertise the fact that they do make lubricating oil of high quality. They use trade publications and direct-by-mail and special campaigns of their own.

2.—Each company has a staff of visiting engineers. These engineers make calls on ships and chat with the chief engineer, asking him about his lubricating oil, etc., what his difficulties may be, what his special problems are, and of course they touched upon the good qualities of their own company's oil. They do not however, make any direct sales, they can not make such sales to chief engineers as a rule. They of course report to their respective companies what they find on individual ships, which information is useful both in promoting sales and in all efforts made to improve the quality of the lubricating oil. Most companies

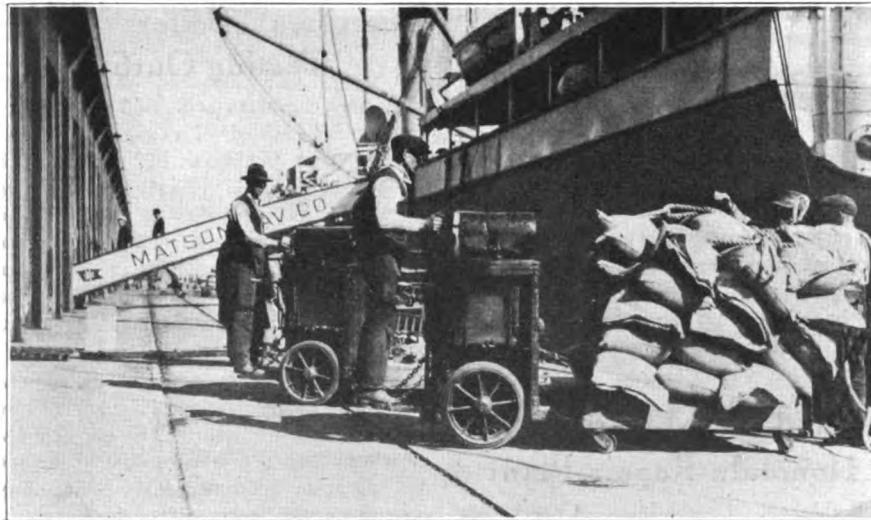
also have special lubricating engineers who are qualified to look over any particular job and to recommend the type of oil which will work out most successfully for the particular problems encountered.

Most sales are made by virtue of contracts entered into directly between the oil company and the consumer. In the case of some companies such contract with the consumers carries with it the opportunity for the consumer to obtain lubricating oil of correct specifications in most any port the ship happens to be in. Particulars as to the kind of lubricating oil needed by this ship are on file at these branch distributing points. In this way, no matter where the ship is, she receives the same careful attention in regard to her lubricating oil. Of course, such distributing stations are not located all over the world but are found in the principal and important ports. One company states that practically all of its business is under contract and that quality is the chief concern of the educated consumer. Of course, all companies do sell lubricating oil as may be required to middlemen such as the supply houses, who in turn may sell directly small quantities to the ships which are not under contract.

The special engineers referred to

above as qualified to pass upon the lubricating needs of any particular job are also in some instances called inspecting engineers who get out copies of specifications proper for lubricating oil for the ships that they go on. These reports are sent to the agents. One company is able to supply ships with the proper kind of lubricating oil at 310 ports. The reports of the inspecting engineers are also sent to the marine superintendents of the lines concerned. Specifications for any type of machinery such as turbine, reciprocating, or diesel is of course prepared. One of the real factors in their advertising is in the marine publications that reach the operating personnel of steamship companies.

The quantity of lubricating oil used in the marine field is extremely uncertain. A rough estimate might be made for the entire active American merchant fleet 500 gross tons and over of one-million and a quarter gallons per year with possibly an additional three quarters of a million gallons to foreign ships. Of course, there is a vast fleet of smaller vessels, tugboats, work boats, yachts etc., that also use lubricating oil. Possibly at a rough estimate, these account for another million gallons per year, making a grand total of three million gallons per year.



ELECTRIC LIFT TRUCKS READY TO RAISE AND TRANSPORT LOAD OF SUGAR AT SAN FRANCISCO PIER

Electric Lift Trucks at Frisco Handle Sugar

In unloading bags of sugar brought from the Hawaiian islands, the Matson Navigation Co., San Francisco, uses electric lift trucks. About 15 bags of sugar are placed in a sling and lowered from the steamer on to a wooden platform supported on four rollers. Electrically operated trucks equipped with lift platforms transport these loaded platforms from the ship's side to the freight car or to the place on the dock where the sugar is to be stored. The lift platform of the electric truck is run under the platform that carries the sugar. This platform is raised so that the four rollers are above the deck of the pier. When the load of sugar has been delivered to its proper place on the dock, the lift platform is lowered and the electric truck backs away. The sugar is then piled up, while the truck returns with an empty platform to the ship's side for another load.

French Cable Ship for Western Union

The cable ship CYRUS FIELD which was ordered by the Western Union Telegraph Co., from the Chantiers et Ateliers de Saint-Nazaire, Penhoet, France, was launched at Saint-Nazaire recently. The principal characteristics of the vessel are as follows:

Length, ft., in.	210 11
Breadth, ft., in.	34 0
Draft, ft., in.	16 0
Gross register tonnage	1070
Displacement tonnage	2155
Engines, total indicated horse-power	1200
Speed in knots	11.5

Plates and structural shapes for the vessel were ordered in France but a

large quantity of accessories came from America. Spare parts, threads, nuts and bolts, etc., were made to British standard measurements.

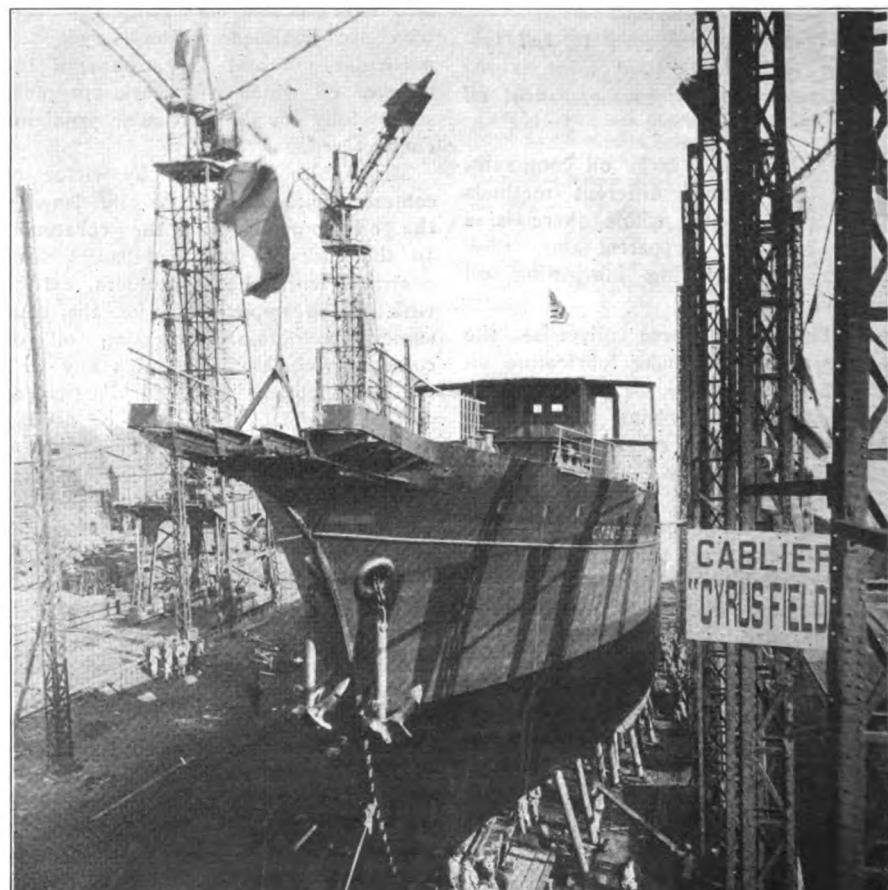
The launching of the CYRUS FIELD took place before several American and French notabilities among whom were: S. J. Goddard, vice president and Admiral C. P. R. Coode, managing director of the Western Union Telegraph Co.; Rene Fould, president of the Societe des Chantiers et Ateliers de Saint-Nazaire-Pen-

hoet and Madame Fould; M. dal Piaz, president of the Compagnie Generale Transatlantique; Commander Jules James representing the American ambassador in Paris; M. Pendleton Beckley, vice president of the American chamber of commerce in Paris; M. Dorlhac de Borne representing the French under-secretary of posts and telegraph.

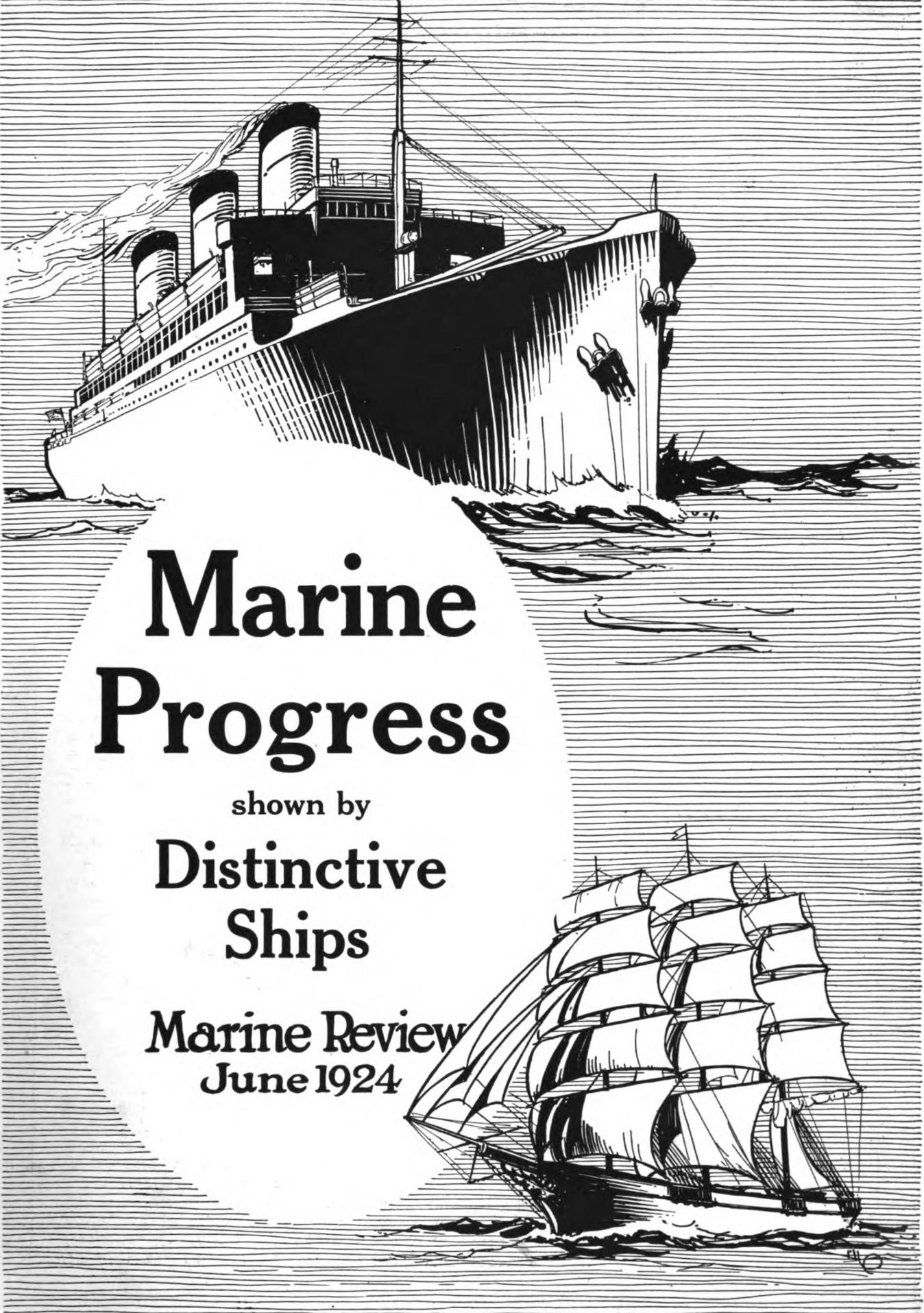
An idea of the capacity of the Ateliers de Saint-Nazaire will be obtained by the fact that the largest steamer of the Compagnie Generale Transatlantique, the PARIS, was built at its yard and the FRANCE, the second largest steamer of the C. G. T., was repaired at Saint-Nazaire.

An agreement reached by the Association of Pacific Fisheries and the Washington state department of labor and industries is expected to effect an improvement at Alaska canneries. Hereafter, employes will be guaranteed minimum earnings, protection from peddlers of liquor and narcotics, gambling and other conditions which in past years have caused complaint.

Passenger service of the White Star Line between Boston and Mediterranean ports will be resumed when the steamship ARABIC sails from Naples June 19 and arrives at Boston July 1.



CABLE SHIP CYRUS FIELD BUILT FOR THE WESTERN UNION TELEGRAPH CO. LEAVING THE WAYS AT SAINT-NAZIRE, FRANCE



Marine Progress

shown by

Distinctive Ships

Marine Review
June 1924

Passenger Ships

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**Oil or Electric Drive.*



Hawaiian
Island
Passenger
Steamer
Haleakala

Name of Vessel—HALEAKALA

Owner—Inter-Island Steam Navigation Co., Ltd., Honolulu, T. H.

Builder—Sun Shipbuilding & Dry Dock Co., Chester, Pa.

Naval Architect—H. Frear.

When Launched—Sept. 18, 1922; when completed, Feb. 15, 1923.

Classification—American Bureau of Shipping.

HULL PARTICULARS

Length overall, 360 feet; length between perpendiculars, 345.2 feet; breadth molded, 46.2 feet; depth molded, 27.9 feet; draft loaded, 21 feet; displacement loaded, 5535; gross tonnage, 3679; net tonnage, 1546; passenger capacity, 451 first, 326 second, 125 third; cargo capacity, tons, 2200; cargo capacity, cubic feet, 87,183; bunker fuel, capacity in tons, 681; speed, 16.5 knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, Sun Shipbuilding & Dry Dock Co.; number 1; type, 4-cylinder, triple expansion; size, 30 x 52 x 65 x 65 and 54-inch stroke.

Boilers—Number 4; name of maker, Babcock &

Wilcox Co.; type, water tube; size, length of drum, 19 feet 6 inches; diameter of drum, 42 inches, total heating surface, 19,200 square feet; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—2 Weir feed pumps, 2 Gould hand pumps, 2 Wheeler centrifugal pumps. All other pumps made by Worthington Pump & Machinery Corp.

Windlasses—1, Allan-Cunningham Co.

Winches—Sun Shipbuilding & Dry Dock Co.

Steering Engine—Allan-Cunningham Co.

Propellers—Sun Shipbuilding & Dry Dock Co.

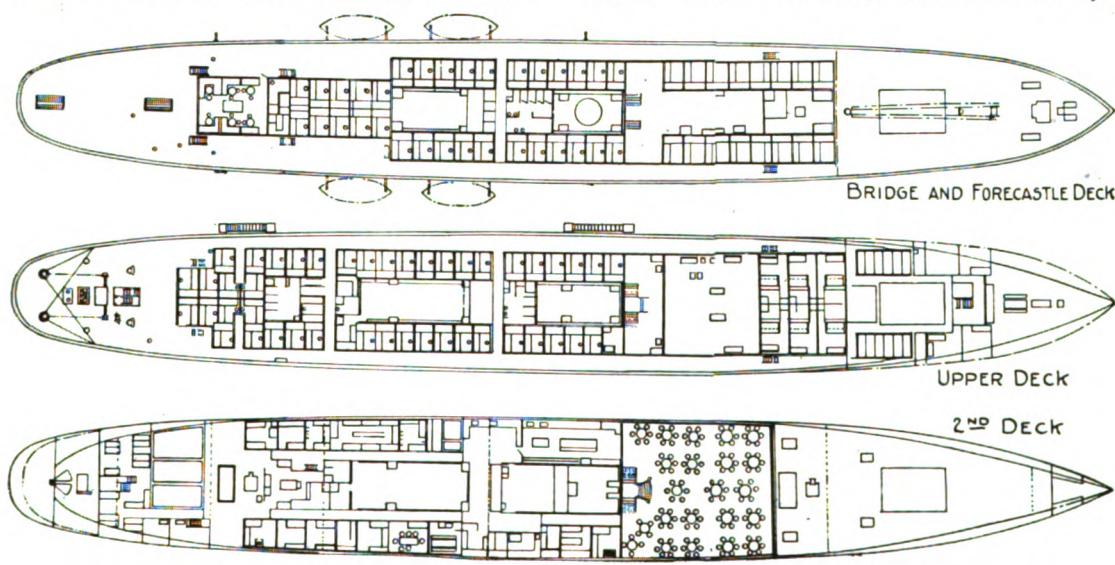
Refrigerating Mach.—Brunswick-Kroeschell Co.

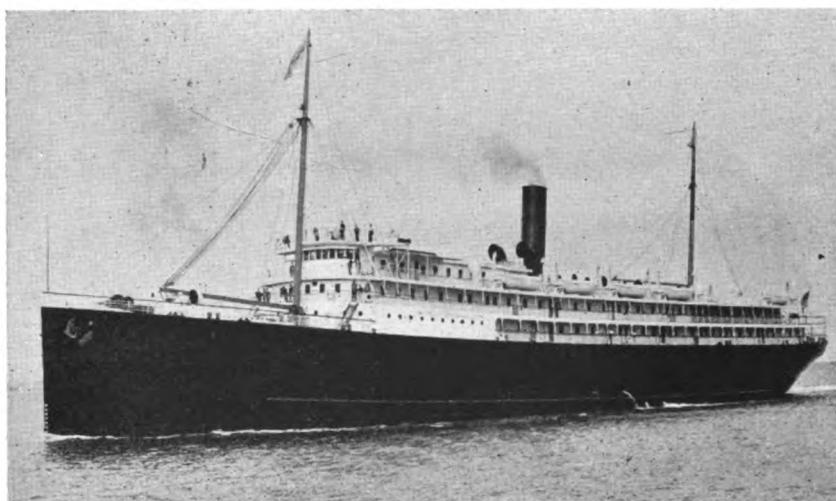
Oil Burning Equipment—4 oil heaters, Coen Co., 24 burners, Babcock & Wilcox Co.

Electric Generators—3 General Electric Co.

Radio Apparatus—Radio Corp. of America.

Two-masted, passenger steamer, machinery amidships, for carrying tourists between Honolulu and Hilo, 200 miles, with stops at the Island of Maui. All staterooms are outside rooms. Three round trips are made weekly.





**Coastwise
Passenger
Liner
City of
Chattanooga**

Name of vessel—CITY OF CHATTANOOGA (sister ship, CITY OF BIRMINGHAM).

Owner—Ocean Steamship Co. of Savannah.

Builder—Newport News Shipbuilding & Dry Dock Co.

Naval architect—H. F. Norton.

When launched—Aug. 30, 1923; when completed, Nov. 1, 1923.

Classification—American Bureau of Shipping A-1.

Service—Coastwise, passenger and freight.

HULL PARTICULARS

Length over all, 401 feet; length between perpendiculars, 382 feet; breadth molded, 52 feet; depth molded, 35 feet; draft loaded, 18 feet 6 inches; displacement loaded, 7180 tons; gross tonnage, 5861; net tonnage, 4343; passenger capacity, 237; cargo capacity, 323,500 cubic feet; bunker fuel capacity in tons, 458; speed, 12½ knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, Newport News S. B. & D. D. Co.; number, 1; type, T. E. reciprocating; size 26 x 44 x 76 and 48 inches.

Boilers—Number, 4; name of maker, N. N. S. B. & D. D. Co.; type, Scotch S. E.; size, 11 feet 6 inches x 177 inches diameter; fuel, coal; 12 Diamond Power soot blowers.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Warren Steam Pump Co.

Windlasses—Hyde Windlass Co.

Winches—Lidgerwood Mfg. Co.

Steering Engine—Hyde Windlass Co.

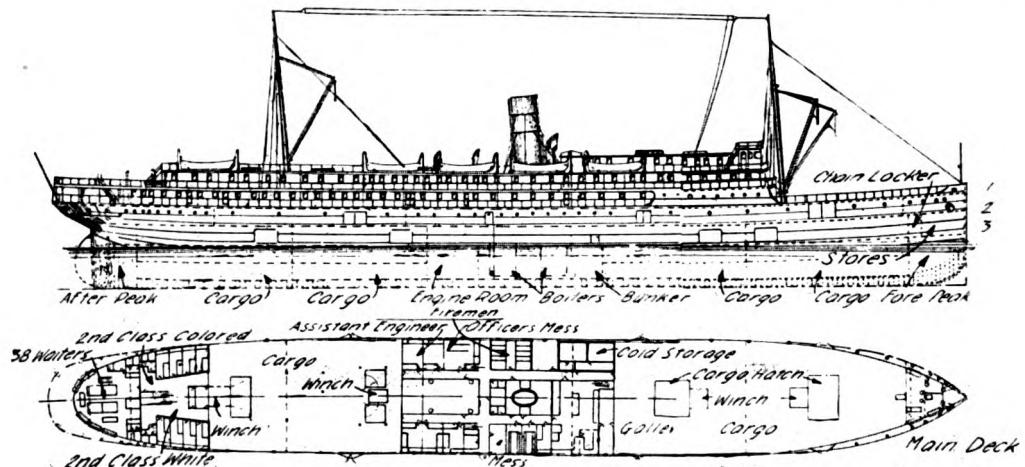
Propellers—Newport News Shipbuilding & D. D. Co.

Refrigerating Machinery—Brunswick-Kroeschell Co.

Electric Generators—General Electric Co.

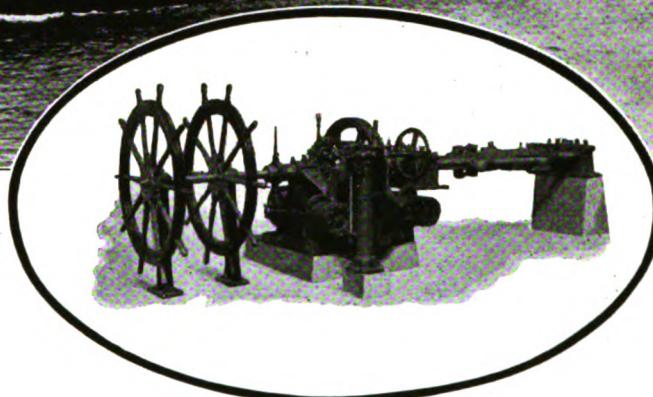
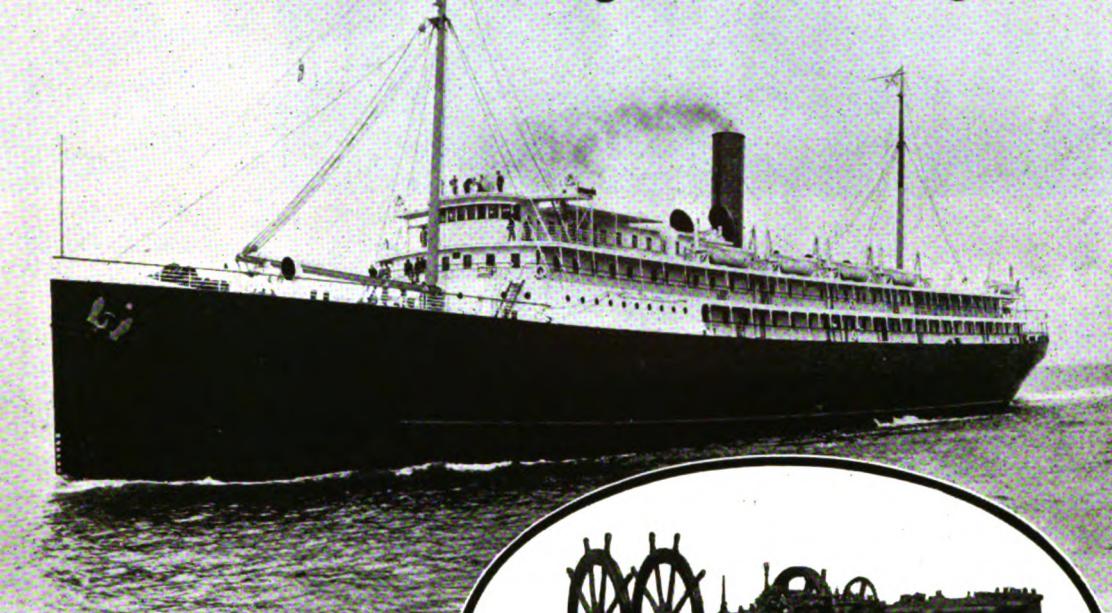
Life Saving Equipment—Welin Boat & Davit Corp.

Radio Apparatus—Radio Corp. of America



HYDE

Marine Auxiliary Machinery



S. S. City of Chattanooga

Equipped with HYDE Steering
Engine and HYDE Windlasses

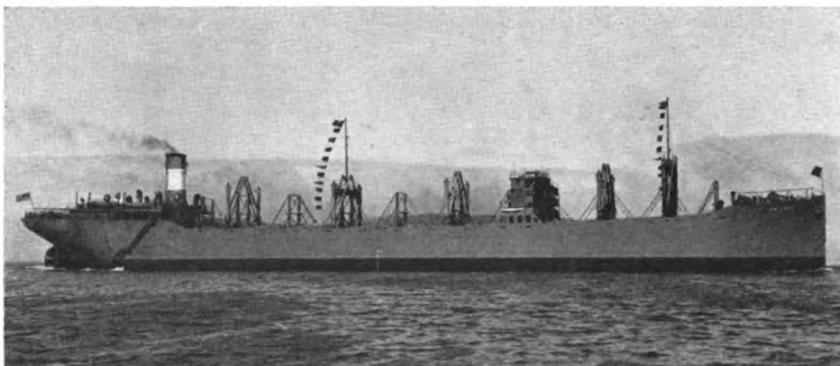
IN the finest ships afloat you will find Hyde Marine Auxiliary Machinery unquestionably accepted as the standard. Its development has paralleled the progress of the marine industry itself. Its specification and use on the distinctive vessels listed here is final evidence of its recognition by Naval Architects, Shipbuilders and Ship Operators.

CARABOBO	Windlass	Steering Engine	Capstan
EURANA	Windlass	Steering Engine	Capstan
ISLANDER	Windlass	Steering Engine	Capstan
CITY OF CHATTANOOGA	Windlass	Steering Engine	Capstan
CITY OF BIRMINGHAM	Windlass	Steering Engine	Capstan
STEELMOTOR	Windlass	Steering Engine	Capstan
STEELVENDOR	Windlass	Steering Engine	Capstan
BERKSHIRE	Windlass	Steering Engine	Capstan
CORNISH	Windlass	Steering Engine	Capstan
WILTON	Windlass	Steering Engine	Capstan
BOSTON	Windlass	Windches	
NEW YORK	Windlass	Windches	
BIENVILLE	Windlass	Windches	
ALASKA	Windlass	Windches	
		Steering Engine	Capstan
		Steering Engine	

HYDE Marine Auxiliary Machinery includes windlasses, steering gears, capstans and cargo winches—steam, hand and electrically driven, as well as Manganese Bronze Propellers.

HYDE WINDLASS COMPANY : : Bath, Maine

Please mention MARINE REVIEW when writing to Advertisers



Ocean
Bulk
Freighter
Chilore

Name of vessel—CHILORE.

Owner—Ore Steamship Co.

Builder—Bethlehem Shipbuilding Corp., Ltd. (Union Plant) San Francisco.

Naval architect—Hugo Frear.

When launched—Nov. 28, 1922; when completed—June 26, 1923.

Classification—American Bureau of Shipping.

HULL PARTICULARS

Length overall, 571 feet 6 inches; length between perpendiculars, 550 feet 1 inch; breadth molded, 72 feet; depth molded, 44 feet; draft loaded, 32 feet 4 inches; displacement loaded, 29,950 tons; gross tonnage, 13,154; net tonnage, 8,393; cargo capacity, tons, 20,000; cargo capacity, cubic feet, 272,550 (ore), 913,746 (coal); bunker fuel capacity in tons, 3,400; speed, 11½ knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, Bethlehem Shipbuilding Corp., Ltd.; number 2; type, Curtis turbine; size, 5000 shaft horsepower.

Boilers—Number 3; name of maker, Bethlehem Shipbuilding Corp., Ltd.; type, Scotch; size, 17 feet 6 inches inside diameter, 12 feet long; fuel, oil; 18 Diamond Power soot blowers.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Bethlehem-Weir.

Windlasses—Bethlehem Shipbuilding Corp., Ltd.

Winches—Bethlehem Shipbuilding Corp., Ltd.

Steering Engine—Bethlehem Shipbuilding Corp., Ltd.

Propellers—Bethlehem Shipbuilding Corp., Ltd.

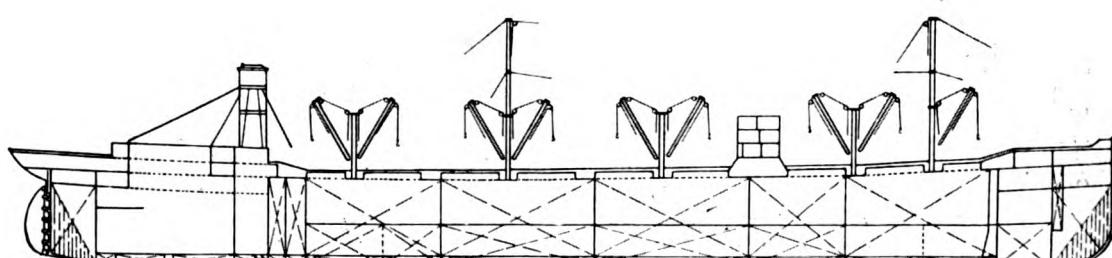
Refrigerating Machinery—Brunswick-Kroeschell Co.

Oil Burning Equipment—Bethlehem-Dahl.

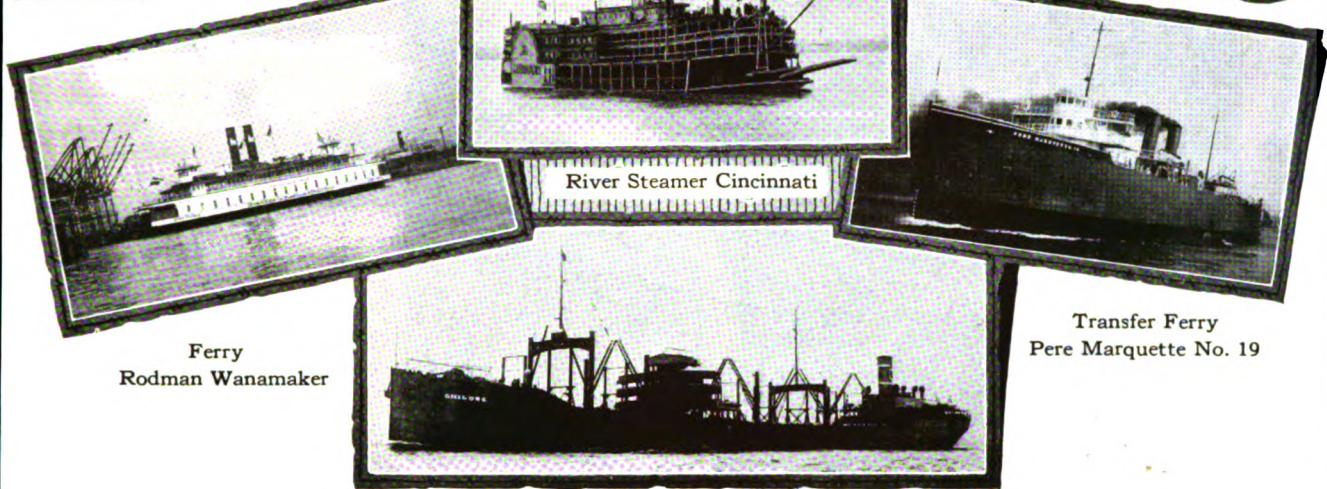
Electric Generators—General Electric Co.

Radio Apparatus—Radio Corp. of America.

The CHILORE is a steel ship built on the Isherwood system of framing; with machinery at the stern, one complete steel deck, poop, forecastle, navigating bridge located about 170 feet from the stem. She is designed to carry both ore and coal between the United States and Cuba or Chile.



ELES CO

Ferry
Rodman Wanamaker

River Steamer Cincinnati

Transfer Ferry
Pere Marquette No. 19

Tanker Chilore

We will guarantee a return of at least 40 per cent in the investment required to install Elesco Superheaters on ships like these.

Some ships, so equipped, are running higher than 100 per cent return.

Over 3,000 ships are equipped with Elesco type Superheaters.

THE SUPERHEATER COMPANY

17 East 42nd Street
NEW YORK

Peoples Gas Building
CHICAGO

Canada: The Superheater Company, Limited, Montreal

Todd Shipyards Corporation, Licensed by The Superheater Company, under Schmidt and other patents.



82,000,000 HORSEPOWER EQUIPPED IN LOCOMOTIVE, STATIONARY AND MARINE SERVICE

Please mention MARINE REVIEW when writing to Advertisers



**Pacific
Passenger
Liner
Alaska**

Name of vessel—ALASKA.

Owner—Alaska Steamship Co.

Builder—Todd Dry Dock & Construction Corp., Tacoma, Wash.

Naval Architect—W. C. Nickum.

When Launched—April 19, 1923; when completed—June 8, 1923.

Classification—American Bureau.

Construction System—Isherwood.

HULL PARTICULARS

Length over all, 365 feet 10 inches; length between perpendiculars, 350 feet; breadth molded, 49 feet; depth molded, 33 feet 6 inches; draft loaded, 20 feet 1 $\frac{1}{4}$ inches; displacement loaded, 6551 tons; gross tonnage, 4658; net tonnage, 2775; passenger capacity, 233; steerage, 103; cargo capacity, tons, weight, 2800 S. tons; cargo capacity cubic feet, 130,000 bales; bunker fuel capacity, 1085 S. tons; speed, 16 knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, Hooven, Owens, Rentschler Co.; number 2; type, triple expansion; size, 24 $\frac{1}{2}$ x 41 $\frac{1}{2}$ x 72 and 48-inch stroke.

Boilers—Number 6; name of maker, Babcock & Wilcox Co.; type, 4-inch tube; size, 2907 square feet heating surface; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Warren Steam Pump Co.

Windlasses—American Clay Machinery Co.

Winches—Lidgerwood Mfg. Co.

Steering Engine—Hyde Windlass Co.

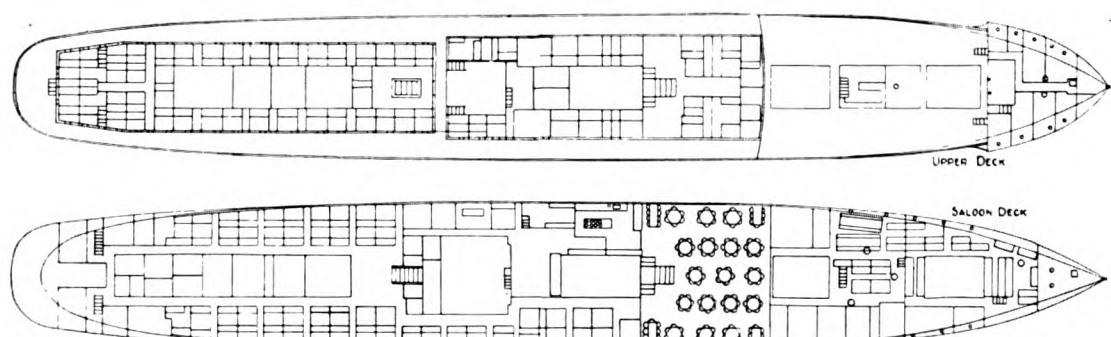
Propellers—Doran Brass Foundry Co.

Refrigerating Machinery—Brunswick-Kroeschell Co.

Oil Burning Equipment—Todd Shipyards Corp.

Electric Generators—General Electric Co.

Oil Purifier—De Laval Separator Co.



80 American Steamships equipped with Diamond Soot Blowers in 1923

*Here's a partial list of
ships equipped in 1923.*

Planet Line Inc.

Corvus
Clauseus
Centaurus

Munsen Line

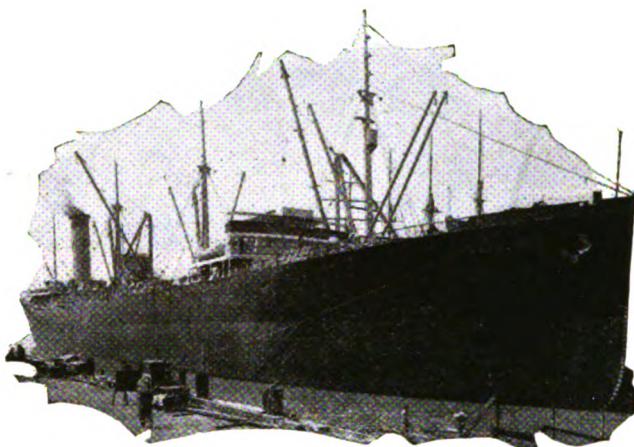
American Legion
Southern Cross

Savannah Line

City of Chattanooga
City of Birmingham

Isthmian Steamship Lines

Crofton Hall
Anniston City
Steel Ranger
Steel Scientist
Steel Age
Steel Mariner
Steel Trader
Montgomery City
Mobile City
Memphis City
Tuscaloosa City
Fairfield City
Chattanooga City



THIS record speaks for itself. In a year when it has been necessary to cut operating costs to the bone, Diamond Soot Blowers have had one of the most successful seasons ever experienced by any manufacturer of Marine Equipment. What is the answer? Diamond Soot Blowers do save fuel—5 per cent in the average case. They increase boiler capacity, and they increase steaming radius. The fireroom crew are enthusiastic over Diamond Soot Blowers and stay longer with the ship on which they are installed.

*Write for this
interesting' Book*



Cleveland, Ohio
608 Rockefeller Bldg.

New York City, 90 West St.

**DIAMOND POWER SPECIALTY CORPORATION
DETROIT, MICH.**

Please mention MARINE REVIEW when writing to Advertisers



**Diesel
Electric
Driven
Tanker**
J. H. Senior

Name of Vessel—J. H. SENIOR

Owner—Standard Oil Co. (New Jersey.)

Builder—Newport News Shipbuilding & Dry Dock Co.

When Launched—Jan. 5, 1924; when completed, Feb. 22, 1924.

HULL PARTICULARS

Length overall, 220 feet 2 inches; length between perpendiculars, 210 feet; breadth molded, 38 feet; depth molded, 16 feet 6 inches; draft load ext. in salt water, 13 feet; displacement loaded in salt water, 2335 tons; displacement light in salt water, 735 tons; deadweight loaded, in salt water, 1600 tons; cargo oil capacity, 11,496 barrels of 50 gallons each; bunker fuel oil, 150 barrels of 50 gallons each; speed, 8½ knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, McIntosh & Seymour Co.; number 2, 6 cylinders each, 275 revolutions per minute, 4-cycle, nonreversible diesel engines, each direct-connected to a Westinghouse 185 kilowatt 115 volt direct-current generator, with attached 35 kilowatt, 115 volt ex-

citer; diameter of cylinders, 13 inches; stroke, 18 inches; motor, 450 shaft horsepower, 100 revolutions per minute Westinghouse direct current 230 volts, single armature, direct-connected to the propeller shaft.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Cargo oil, Northern Fire Apparatus Co., and De Laval.

Windlass—Allan Cunningham Co., motor driven, 10 horsepower.

Capstan—Allan Cunningham Co., motor driven, 10 horsepower.

Steering Gear—Allan Cunningham Co., motor driven, 5 horsepower.

Propeller—Newport News Shipbuilding & Dry Dock Co.

Refrigerating Machinery—Brunswick-Kroeschell Co.

Electric Generators—Fairbanks-Morse Co.

Auxiliary Compressor—Winton Gas Engine Co.

Oil Purifier—DeLaval Separator Co.



De Laval Oil Purifiers

**save oil and protect
bearings on distinc-
tive ships everywhere**

On at least ten* of the 32 distinctive ships described in this section, and on at least six* sister ships, De Laval Oil Purifiers are furnishing better lubrication at less cost. In all, the engines of more than a thousand vessels, ranging in size from the mightiest dreadnaught or ocean liner to small Diesel-engined fishing craft are getting the cleaner oil that only a De Laval Purifier can provide.

De Lavals have stopped waste of oil on all these vessels. What is of far greater importance, they have practically eliminated the mechanical troubles which invariably follow the use of lubricating oil containing water, sludge, carbon or other foreign matter.

The removal of these impurities by means of a De Laval is instantaneous and positive at all times, and the operation of the machine is not affected by the motion of the ship.

There is no substitute for De Laval centrifugal purification, for the patented De Laval system of strata distribution, by which the effectiveness of centrifugal force is multiplied many times, insures unequalled purifying efficiency.

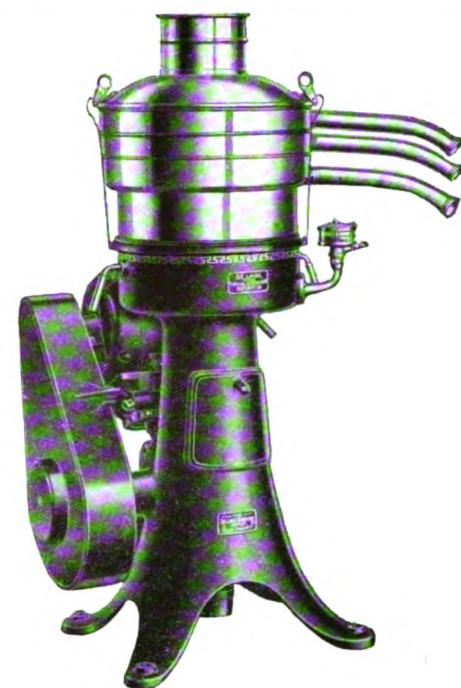
A De Laval on board ship usually pays for itself within a few months and then goes on earning money for many years. Write for full information.

**The De Laval Separator Company
165 Broadway, N. Y.**

De Laval Steam Turbine Co.
Trenton, N. J.

The De Laval Chadburn Co., Ltd.
London, England.

De Laval Pacific Co.
San Francisco



*ORDERS seldom show the names of vessels for which De Laval Oil Purifiers are purchased and it is impossible to compile a complete list of installations. Here are the names of ten "distinctive" ships which are known to have Purifiers:

J. H. Senior
Alaska
Bienville
Boston
Carabobo
Eurana
Hayward
Miller County
Rodman Wanamaker
Steelmotor

Sister ships similarly equipped:

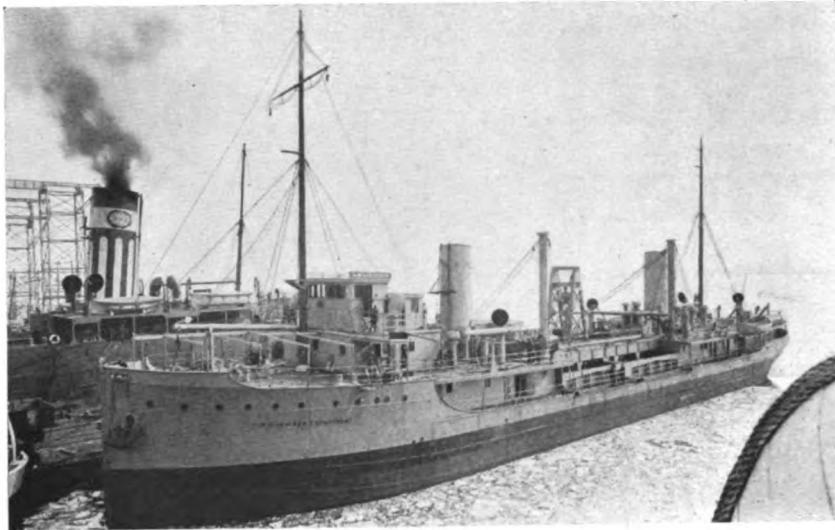
New York
San Leandro
Bidwell County
W. R. Hearst
George W. Loft
Steelvendor

Please send Bulletin containing further information regarding the De Laval Oil Purifier, as checked below:

- Purification of turbine lubricating oil
 Purification of Diesel lubricating oil.

Name.....
Company.....
Address.....
MR.

Please mention MARINE REVIEW when writing to Advertisers



**Seagoing
Hopper
Dredge
A. Mackenzie**

Name of vessel—A. MACKENZIE (and three sister ships, W. L. MARSHALL, DAN C. KINGMAN AND WILLIAM T. ROSELL.

Owner—U. S. Engineer Department.

Builder—Sun Shipbuilding & Dry Dock Co.

Naval Architect—Office, Chief of Engineers, U. S. Army.

When Launched—Nov. 20, 1923; when completed—about March 20, 1924.

Classification—Built to American Bureau of Shipping, Class A-1.

HULL PARTICULARS

Length overall, 268 feet 5 inches; length between perpendiculars, 254 feet; breadth molded, 46 feet; depth molded, 22 feet 6 inches; draft, loaded, 20 feet; displacement loaded, 5060 long tons; hopper capacity, 1350 cubic yards; bunker fuel capacity in long tons, 121; speed, 11½ knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, McIntosh & Seymour Corp., Auburn, N. Y.; number 3; type, 4-cycle, air injection, full diesel; size, 1000 brake horsepower each.

With Oil Engine Main Drive—Number (auxiliary oil engines): 2; size, 225 brake horsepower each; make, McIntosh & Seymour Corp.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Main dredging pump, Sun Shipbuilding & Dry Dock Co. Design furnished by U. S. Engineer department.

Auxiliary Rotary Pumps—Northern Fire Apparatus Co., Minneapolis.

Auxiliary Centrifugal Pumps—Worthington Pump & Machinery Corp., New York.

Windlasses—American Engineering Co.

Winches—American Engineering Co.

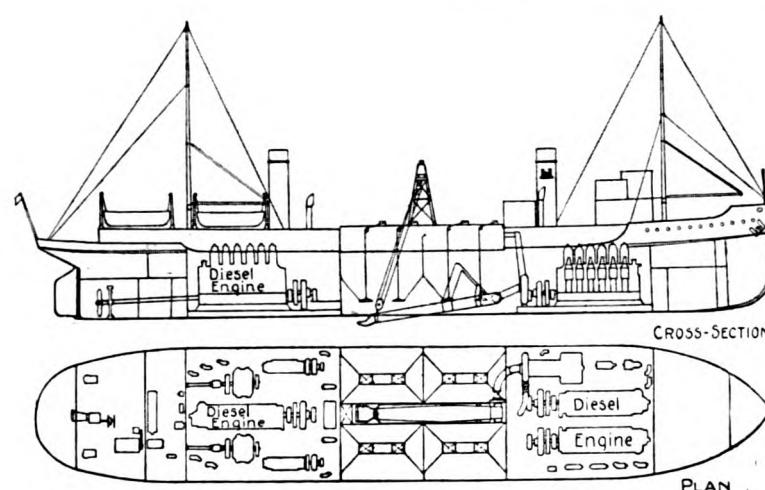
Steering Engine—American Engineering Co.

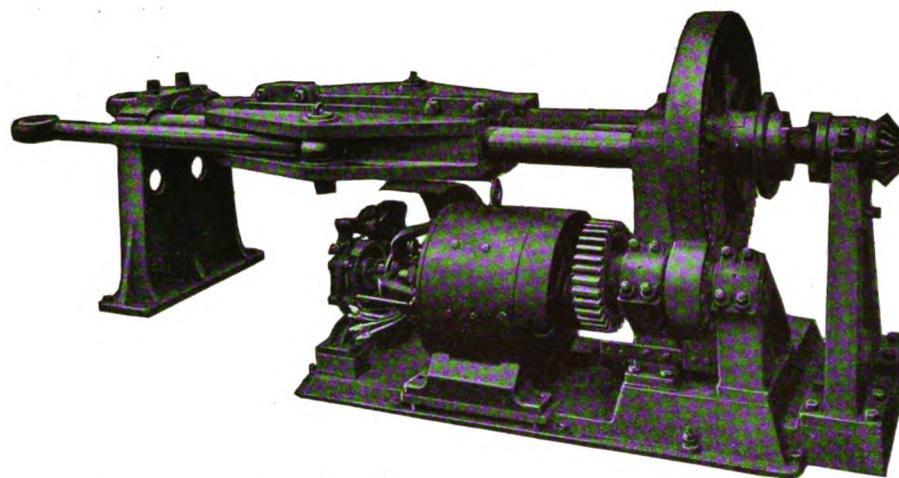
Propellers—Designed by Sun Shipbuilding & Dry Dock Co.; cast by Crown Smelting Co., Chester, Pa.

Refrigerating Machinery—Audiffren Refrigerating Machine Co., New York.

Electric Generators—Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

Life Saving Equip.—Welin Boat & Davit Corp.





A majority of the ships featured and mentioned in this issue are A-E-CO equipped

SHIP		A-E-CO. AUXILIARIES			
U. S. A. HOPPER DREDGES...	Steerer	Windlasses	Capstans	Winches	Ladder Hoist Hopper Door Lifts
STATE OF VIRGINIA.....	Steerer	Windlass	Capstans		
STATE OF MARYLAND.....	Steerer	Windlass	Capstans		
STATE OF PENNSYLVANIA.....	Steerer	Windlass	Capstans		
STATE OF DELAWARE.....	Steerer	Windlass	Capstans		
GEORGE WASHINGTON.....	Steerer	Windlass	Capstans		
ROBERT E. LEE.....	Steerer	Windlass	Capstans		
CHALLENGER.....	Steerer	Windlass	Capstans	Winches	
FERRYBOAT CHELSEA.....	Steerer				
FERRY BOAT OCEAN CITY.....	Steerer				
MILLER COUNTY.....	Steerer				
BIDWELL COUNTY.....	Steerer				
RODMAN WANAMAKER.....	Steerer				
W. R. HEARST.....	Steerer				
GEORGE W. LOFT.....	Steerer				
BENSON FORD.....	Steerer				
JOHN W. BOARDMAN.....	Steerer	Windlass			
GREATER BUFFALO.....		Stern Windlass			
GREATER DETROIT.....		Stern Windlass			
CHEROKEE.....	Steerer				
SEMINOLE.....	Steerer				
TROY SOCONY.....	Steerer				
SCHENECTADY SOCONY.....	Steerer				
ROME SOCONY.....	Steerer				
BURLINGTON SOCONY.....	Steerer				
BOSTON SOCONY.....	Steerer				
GREAT LAKES ENGR.....		Windlass			
FREIGHTER NO. 248.....					
GREAT LAKES ENGR.....					
HULL NO. 247.....		Windlass			
NORFOLK & WASHINGTON STEAMBOAT.....	Steerer				

The complete line of A. E. CO. Dependable Marine Auxiliaries includes Steerers, Windlasses, Capstans, Winches, Hoists, Gypseys, Towing Machines, Telemotors, and Chandlery. Write for catalogs or special information about the auxiliaries in which you are interested.

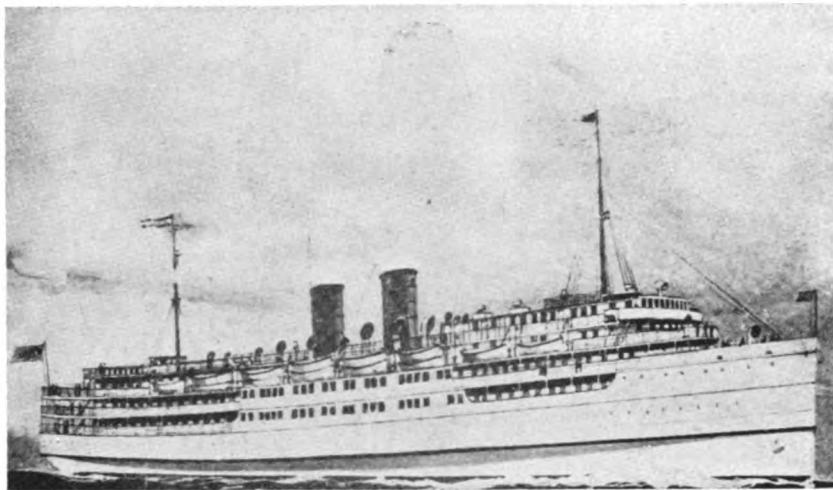
American Engineering Company

Kensington Station, Philadelphia, Pa.

Boston New York Philadelphia Cleveland New Orleans San Francisco

Please mention MARINE REVIEW when writing to Advertisers

**Coastwise
Passenger
Liner
Boston**



Name of vessel—BOSTON, sister ship NEW YORK.
Owner—Eastern Steamship Lines Inc.

Builder—Bethlehem Shipbuilding Corp., Sparrows Point, Md.

Naval Architect—Theodore E. Ferris, New York.

When Launched—Boston, Oct. 27, 1923, New York, Jan. 12, 1924; when completed—both under construction.

Classification—Passenger and freight.

HULL PARTICULARS

Length overall, 402 feet; length between perpendiculars, 385 feet; breadth molded at 15 foot water line 58 feet; depth molded to main deck, 23 feet 9 inches; draft loaded, 16 feet 6 inches; displacement loaded, 5450 tons; gross tonnage, approximately 5100; net tonnage, approximately 2850; passenger capacity, 893 first; cargo capacity, tons, 400; cargo capacity cubic feet, 90,300; bunker fuel capacity in tons, 270 long tons of fuel oil; speed, 19 knots.

MACHINERY PARTICULARS

Name of builder—Bath Iron Works, Bath, Me.; number 2, twin screw-two high-two low; type,

Parsons turbines, single reduction gear; size, 7500 shaft horsepower.

Boilers—Number 6; name of maker, Bethlehem Shipbuilding Corp.; type, Scotch single end; size 11 feet 8 inches long and 16 feet 4 inches diameter; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp.

Windlasses—Hyde Windlass Co.

Winches—Hyde Windlass Co.

Steering Engine—Bethlehem Shipbuilding Corp.

Propellers—Bethlehem Shipbuilding Corp.

Refrigerating Machinery—York Mfg. Co.

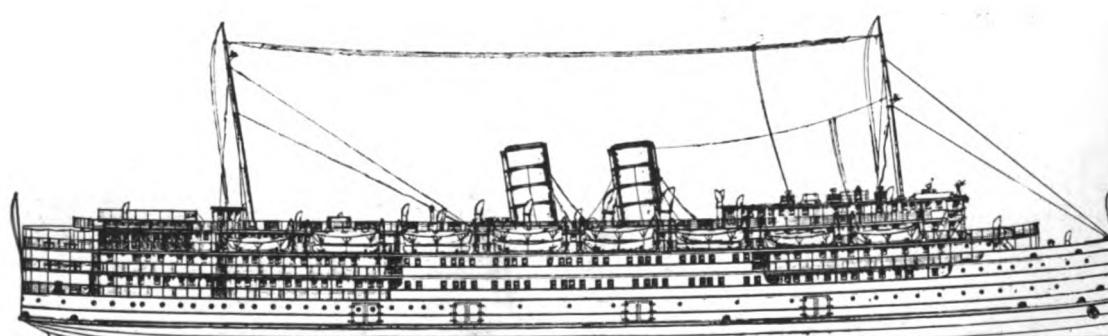
Oil Burning Equipment—Bethlehem Dahl System.

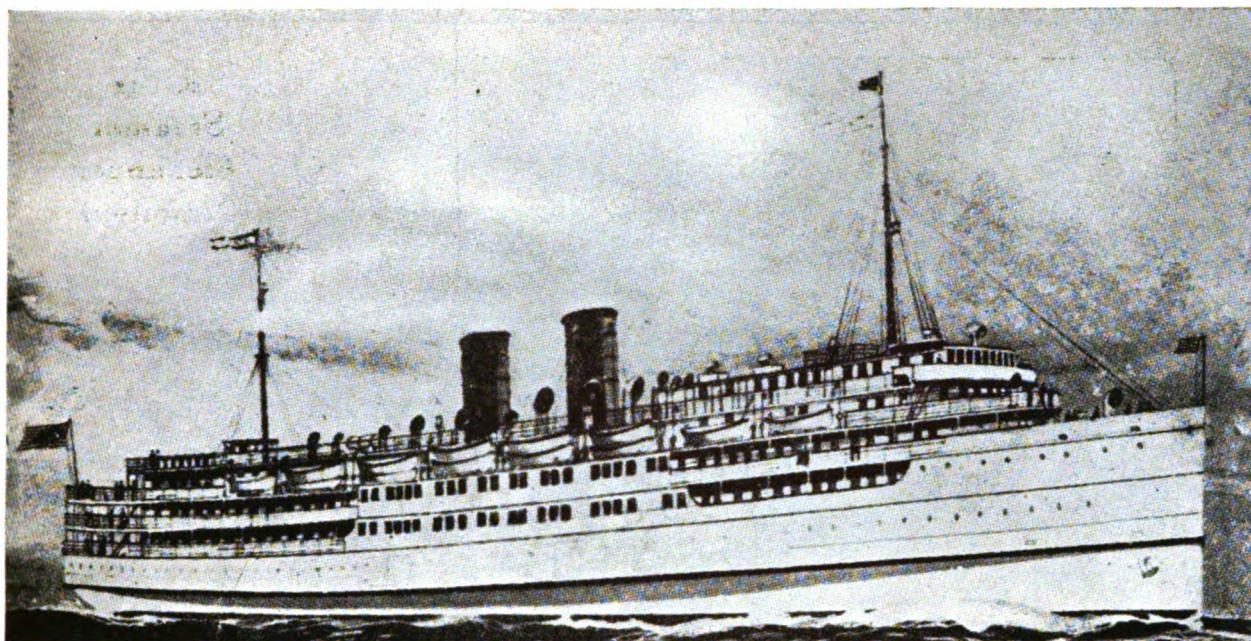
Electric Generators—DeLaval Steam Turbine Co.

Reduction Gears—De Laval Steam Turbine Co.

Radio Apparatus—Radio Corp. of America.

Oil Purifier—De Laval Separator Co.





S. S. "Boston" for service between Boston and New York

Worthington Supremacy

The following ships are "Worthington" equipped—as far as it was possible for Worthington to equip them:

Alexander Hamilton
Boston and New York
Carabobo
Cornish and Wilton
Dickenson
Eurana
George Washington and
Robert E. Lee
Haleakala
Islander
Steelmotor and Steelvendor

The following ships also are partially "Worthington" equipped:

A. Mackenzie
Benson Ford and Henry Ford II
Miller County

Experienced shipbuilders and ship-owners are far too wise to consider for a minute, the installation of inferior equipment.

The fact that Worthington Equipment is used so generally for many of the remarkable ships described in the pages of this issue of Marine Review, should be ample proof of Worthington Supremacy.

Our complete service is at your disposal at all times.

WORTHINGTON PUMP AND MACHINERY CORPORATION

Executive Offices:—115 Broadway, New York City.

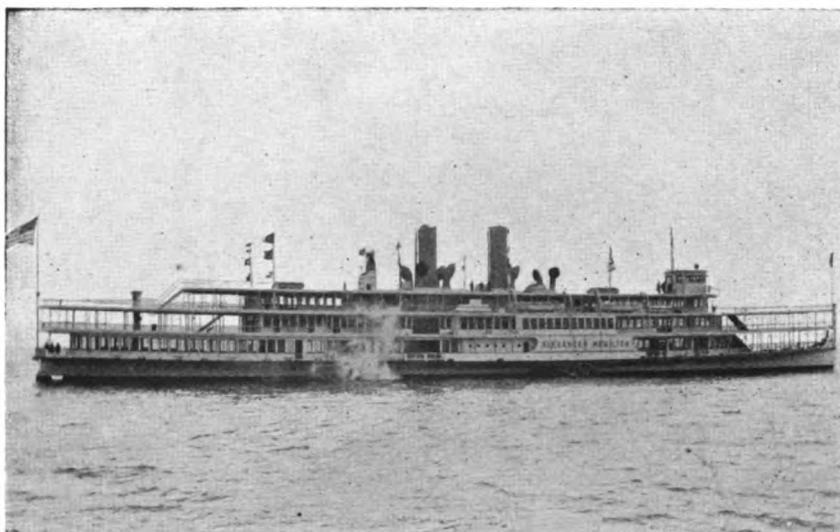
Branch Offices in 24 Large Cities

W-41.8

WORTHINGTON



Please mention MARINE REVIEW when writing to Advertisers



River
Steamer
Alexander
Hamilton

Name of vessel—ALEXANDER HAMILTON.
Owner—Hudson River Day Line.
Builder—Bethlehem Shipbuilding Corp. (Sparrows Point).
Naval architect—J. W. Millard & Bro.
When launched—Oct. 20, 1923; when completed
—May 15, 1924.
Classification—American Bureau of Shipping.

HULL PARTICULARS

Length over all, 349 feet 6 inches; length between perpendiculars, 336 feet 4 inches; breadth molded, 42 feet; depth molded 14 feet 4 inches; draft loaded, 8 feet 8 inches; displacement loaded, 1800 tons; gross tonnage, not yet measured; net tonnage, not yet measured; passenger capacity, 4000; cargo capacity-tons, none; cargo capacity-cubic feet, none; bunker fuel capacity in tons, 60; speed, 20 miles.

MACHINERY PARTICULARS

Main Engine—Name of builder, Bethlehem Shipbuilding Corp.; number, 1; type, diagonal inclined, triple expansion; size, 36½ x 57 x 85 inches and 6 foot stroke.

Boilers—Number, two double ended, two single ended; name of maker, Bethlehem Shipbuilding Corp.; type, Scotch; size, 12 feet inside diameter, 22 feet long and 12 foot inside diameter, 11 feet 3 inches long; 12 Diamond Power soot blowers.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp.; Bethlehem fuel oil pump.

Windlasses—American Engineering Co.

Winches—Hyde Windlass Co.

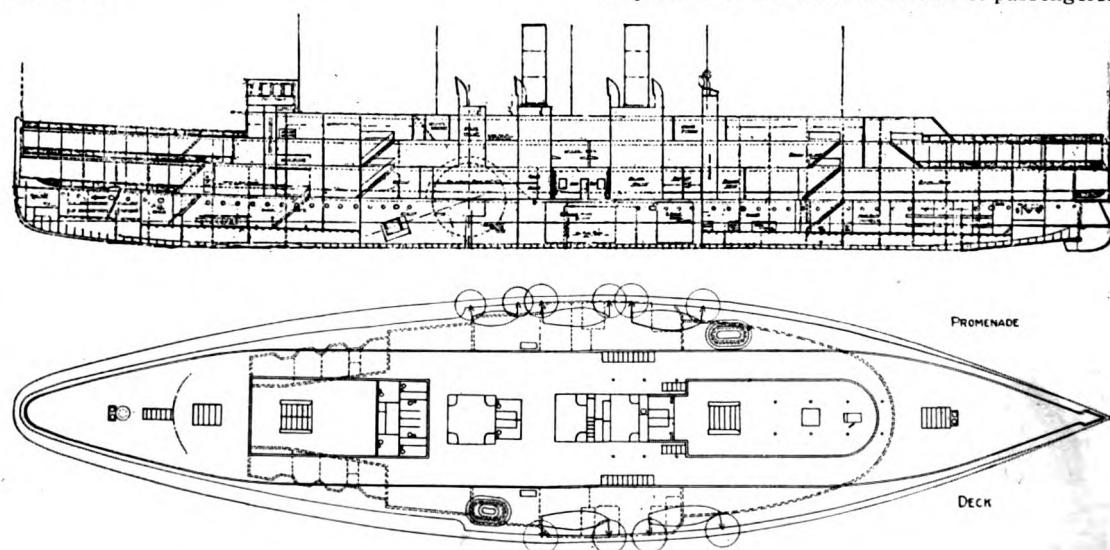
Steering Engine—Bethlehem Shipbuilding Corp.

Propellers—Side Wheels, Bethlehem.

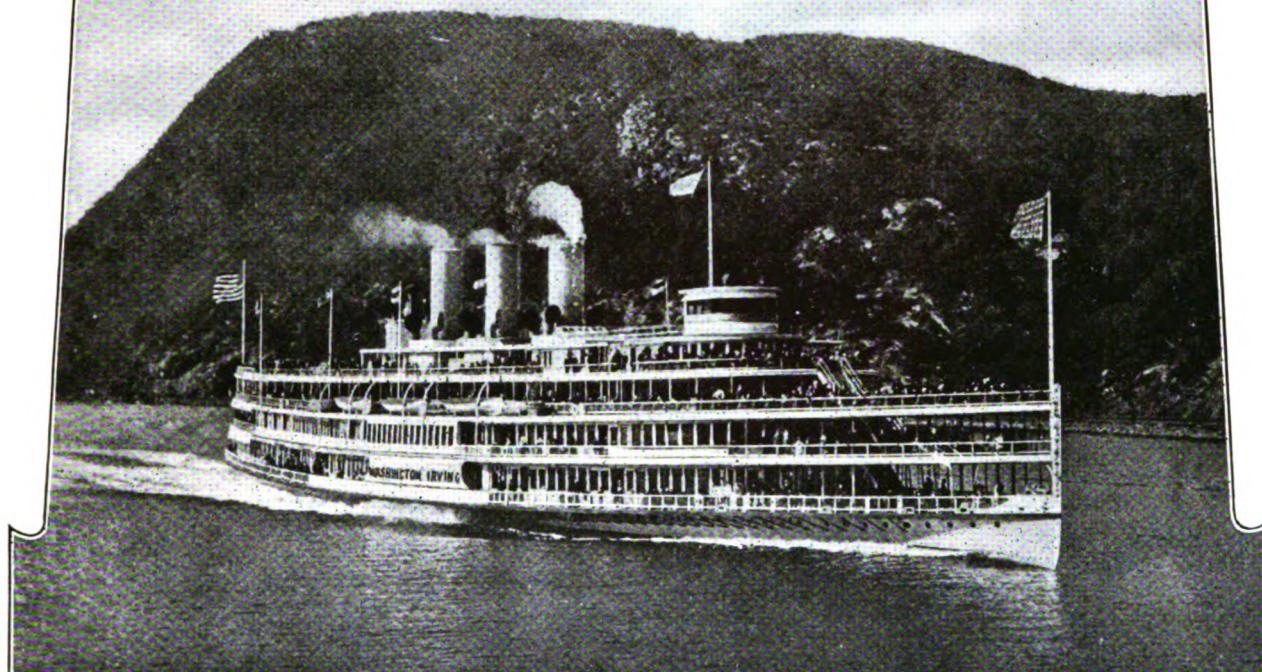
Oil Burning Equipment—Peabody Engineering Co.

Electric Generators—General Electric Co.

The ALEXANDER HAMILTON is a steel hull, paddle wheel steamer for passenger service on the Hudson river. The propelling machinery consists of a diagonal, inclined triple expansion engine, driving paddle wheels of the feathering type. She is a steamer of the latest type embodying latest developments for the accommodation of passengers.



Marine Review



Steamer WASHINGTON IRVING of the Hudson Day Line passing Anthony's Nose on the Hudson river. She has the largest passenger capacity of any vessel in the world.

Cutting the Fuel Bill in Two

WITH the completion in April of the new side wheel passenger steamboat ALEXANDER HAMILTON, the Hudson River Day will have a fleet of six ships, to 1880, two of them constituted the Hudson River Day Line. All these vessels, no freight of any kind is carried, the passenger service being confined exclusively to tourists. It is of course,

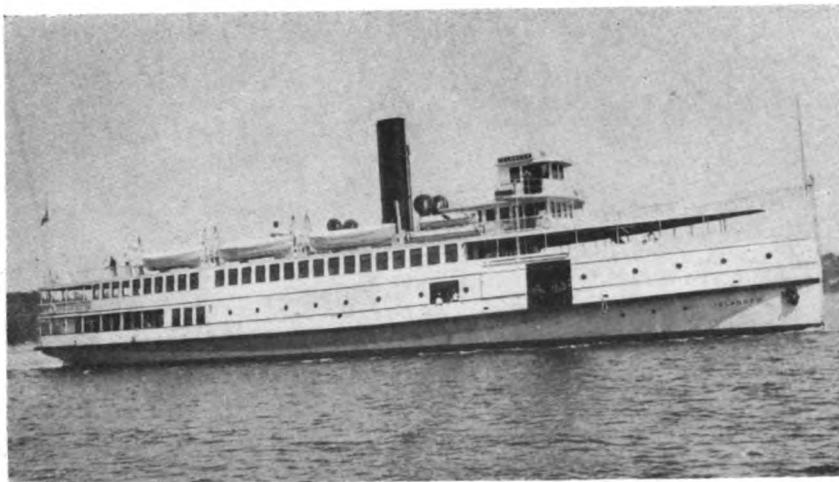
Conversion to Burn Oil

Until the fall of 1922, all of the vessels of the line were coal burners. It was then decided to convert the DEWITT CLINTON to an oil burner, using the Peabody Engineering Corp. type of wide range mechanical burner. The results surpassed all expectations. According to the management of the line, fuel costs per mile were reduced from \$4.00 to \$2.27.

SUBSEQUENT installations on the Hudson River Day Line to the DeWitt Clinton: *The New Steamer Alexander Hamilton.* *Washington Irving.* *Hendrick Hudson.* We invite your inquiries.

PEABODY ENGINEERING CORPORATION
110 East 42nd Street, New York

Please mention MARINE REVIEW when writing to Advertisers



**Day
Passenger
Steamer
Islander**

Name of Vessel—ISLANDER

Owner—New England Steamship Co.

Builder—Bath Iron Works, Bath, Me.

Naval Architect—New England Steamship Co., technical staff.

When Launched—July 19, 1923; when completed Aug. 2, 1923.

Classification—Owners' requirements.

HULL PARTICULARS

Length overall, 210 feet; length between perpendiculars 202 feet; breadth over guards, 50 feet; depth molded 14 feet 6 inches; beam molded, hull 36 feet; draft, loaded, 9 feet 3 inches; displacement loaded, 882 tons; gross tonnage, 1089; net tonnage, 456; passenger capacity, winter 230, summer, 1960; cargo capacity, tons, 150; cargo capacity, cubic feet, 34,000; bunker fuel capacity in tons, 20; speed, 14½ knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, Bath Iron Works; number 1; type, T. E., 4 cylinders; size, 16 x 26 x 30 x 30 and 24 inch stroke; indicated horsepower 1200.

Boilers—Number 2; name of maker, Babcock & Wilcox Co.; type, water tube; size, 130 square

feet grate surface; 4500 square feet heating surface; 16 Diamond Power Specialty Corp. blowers installed.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp. and Warren Steam Pump Co. (feed pumps).

Windlasses—Hyde Windlass Co.

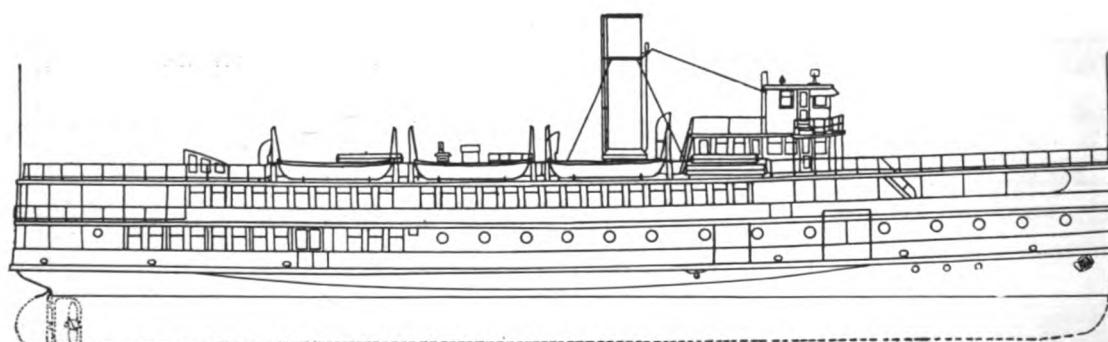
Capstan—Hyde Windlass Co.

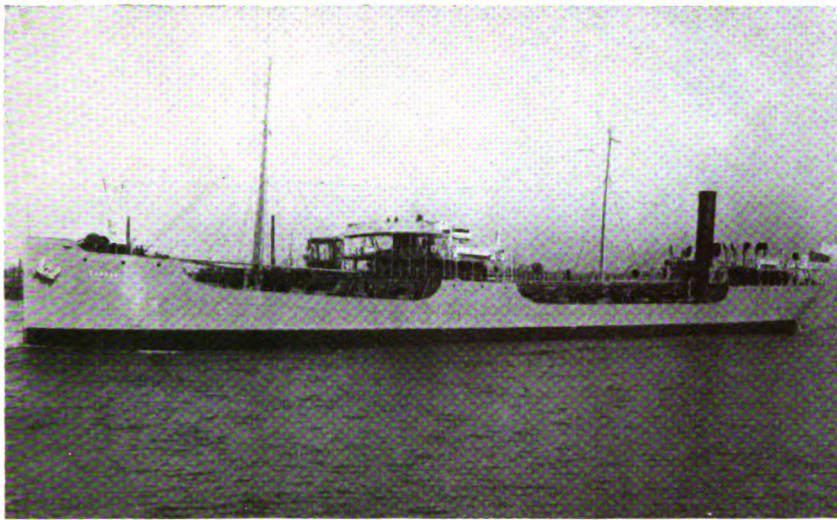
Steering Engine—Hyde Windlass Co.

Propellers—Bath Iron Works.

Electric Generators—General Electric Co.

This vessel carries freight and passengers between New Bedford and the island of Nantucket. She is a day steamer with a number of state rooms which serve as retiring rooms and for rest. The experience of long service in this run has been followed in the design, to make this steamer an able sea-going vessel and to provide the maximum of comfort and safety for passengers. A specialized boat with a pleasing appearance, sturdily and substantially built, the ISLANDER may be said to be one of the best of her kind and a credit to her designers and builders.





**Standard
Type
Tanker
Eurana**

Name of Vessel—EURANA

Owner—New York Shipbuilding Corp., Camden, N. J.

Builder—New York Shipbuilding Corp.

Naval Architect—New York Shipbuilding Corp.

When Launched—July 16, 1921; when completed, March 13, 1923.

Classification—American Bureau Shipping A. I. E. and Lloyds 100 A1.

HULL PARTICULARS

Length overall, 435 feet 8½ inches; length between perpendiculars, 419 feet 3 inches; breadth molded, 56 feet 3 inches; depth molded, 33 feet 4 inches; draft loaded, 25 feet 10½ inches; displacement loaded, 13,967 tons; gross tonnage, 6651; net tonnage, 4159; cargo capacity, tons, 8320; cargo capacity, cubic feet, 416,000 oil, 66,026 dry; bunker fuel capacity in tons, 1175; speed, sea, 11 knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, New York

Shipbuilding Corp.; number 1; type, 3-cylinder, triple, reciprocating; size 27 x 45 x 75 and 51-inch stroke.

Boilers—Number 3; name of maker, New York Shipbuilding Corp.; type, S. E. Scotch; size 16 feet 1 inch diameter and 11 feet 5 inches long; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp., and New York Shipbuilding Corp.

Windlasses—Hyde Windlass Co.

Winches—Hyde Windlass Co.

Steering Engine—Hyde Windlass Co.

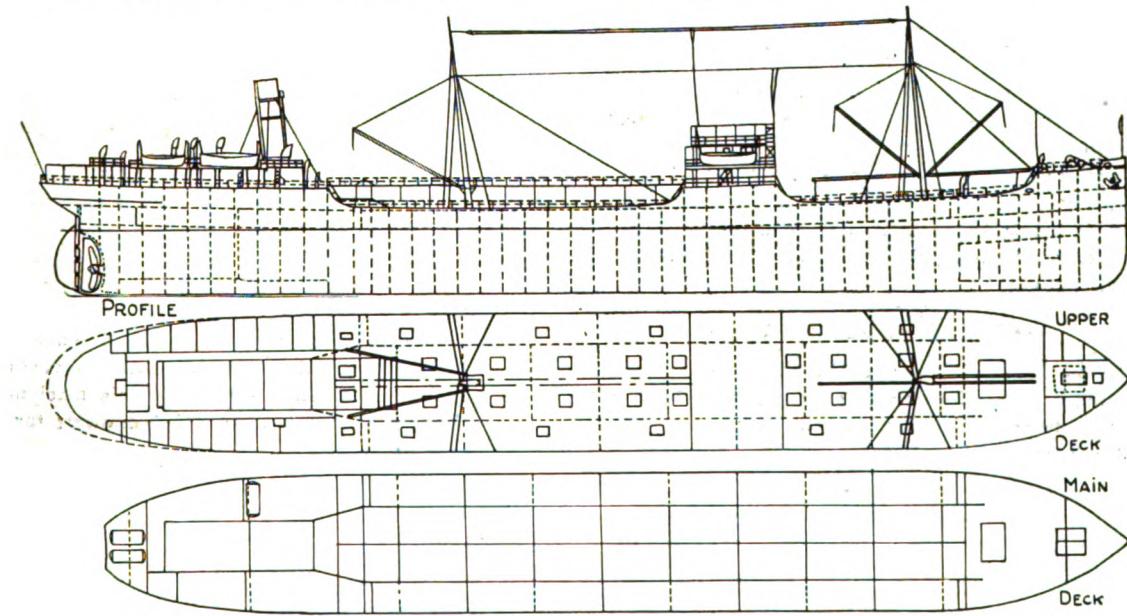
Propellers—New York Shipbuilding Corp.

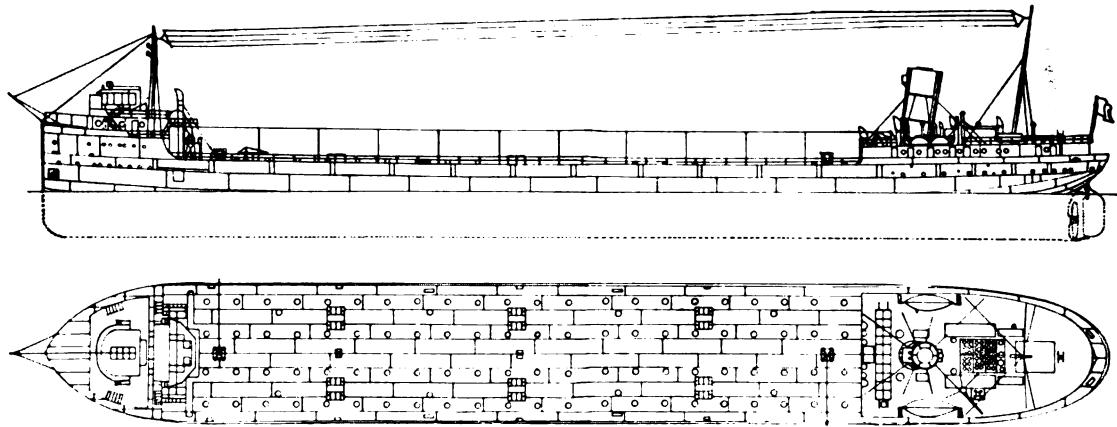
Refrigerating Machinery—Brunswick-Kroeschell Co.

Oil Burning Equipment—Schutte & Koerting.

Electric Generators—General Electric Co.

Oil Purifier—De Laval Separator Co.





Self-Unloading Type Bulk Cement Carrier John W. Boardman

Name of vessel—JOHN W. BOARDMAN.

Owner—Huron Transportation Co., Detroit.

Builder—Toledo Shipbuilding Co., Inc., Toledo, O.

Naval Architect—H. C. Sadler.

When Launched—Sept. 6, 1923; when completed—Nov. 6, 1923.

Classification—American Bureau Highest Class—Lake.

HULL PARTICULARS

Length overall, 350 feet; length between perpendiculars, 334 feet; breadth molded, 55 feet; depth molded, 28 feet; draft loaded, 18 feet; displacement loaded, 8581 tons of 2000 pounds; gross tonnage, 4011; net tonnage, 3148; cargo capacity, tons, 5600; cargo capacity, 28,000 barrels (cement); bunker fuel capacity in tons 120; speed, 12 miles with ballast.

MACHINERY PARTICULARS

Main Engine—Name of builder, Toledo Shipbuilding Co., Inc.; number 1; type, vertical inverted triple expansion; size, 21 x 35 x 59 and 42-inch stroke.

Boilers—Number 2; name of maker, Toledo Shipbuilding Co., Inc.; type, Scotch; size, 14 feet inside diameter and 11 feet long; fuel, coal.

AUXILIARY EQUIPMENT

Manufacturers of:

Windlasses—American Engineering Co.

Winches—Chase Machine Co.

Steering Engine—American Engineering Co.

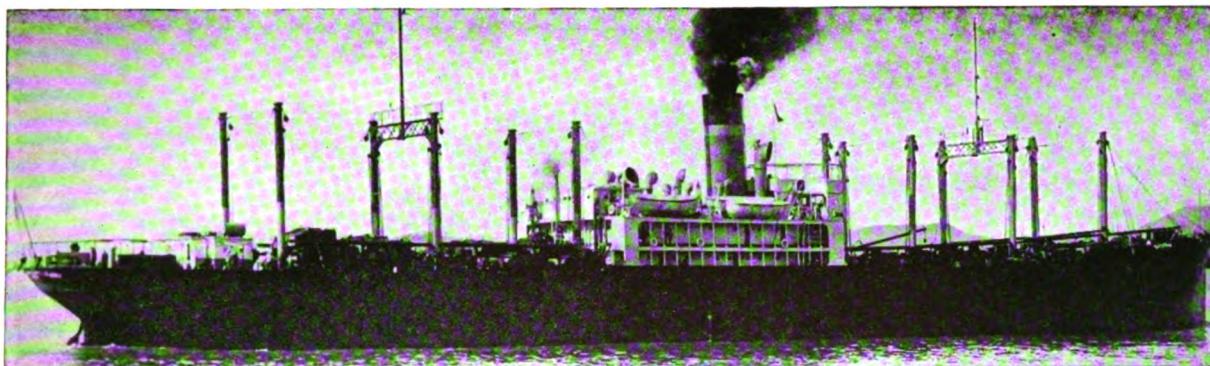
Propellers—Toledo Shipbuilding Co., Inc.

Refrigerating Machinery—Brunswick-Kroeschell Co.

Superheaters—Power Specialty Co.

Electric Generators—Engberg's Electric & Mechanical Works.

The JOHN W. BOARDMAN is a bulk cement carrier of the self-unloading type. The cargo is carried in hoppers which unload into spiral conveyors located below cargo space. Two of these are on each side of ship which, with the cross spiral conveyors, carry cement to a vertical endless bucket conveyor and thence to a shuttle conveyor from which it is taken overboard. This machinery is electrically operated by a 500-kilowatt turbine generator.



U. S. Army Transport "Meigs"—two 15 KW Engberg Generating Sets

Accepted as U. S. Standard for Marine Service

GOVERNMENT engineers in all departments, have long been convinced of the ability of these sets to measure up to their rigid specifications.

Dependable performance has brought an almost universal adoption of Engberg Generating Sets—from the big army transport above, to the steamer below.

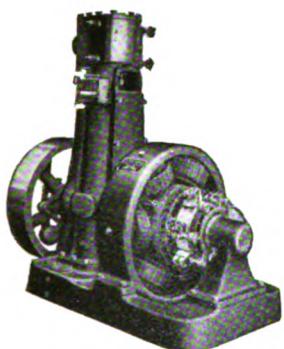
Their simplicity makes them easy to care for and operate, even by the most inexperienced. Their compact build saves floor space. The design of both engine and generator gives the utmost power from every pound of steam used.

They produce economical, dependable light and power. You will find the whole story mighty interesting—write for catalog 104-D6.

Engberg Quality at Reasonable Price

ENGBERG'S ELECTRIC & MECHANICAL WORKS

St. Joseph, Michigan, U. S. A.



Engberg Generating Set



U. S. Steamer "General John McHyde"

ENGBERG

Vertical, Enclosed Self-Oiling, Steam



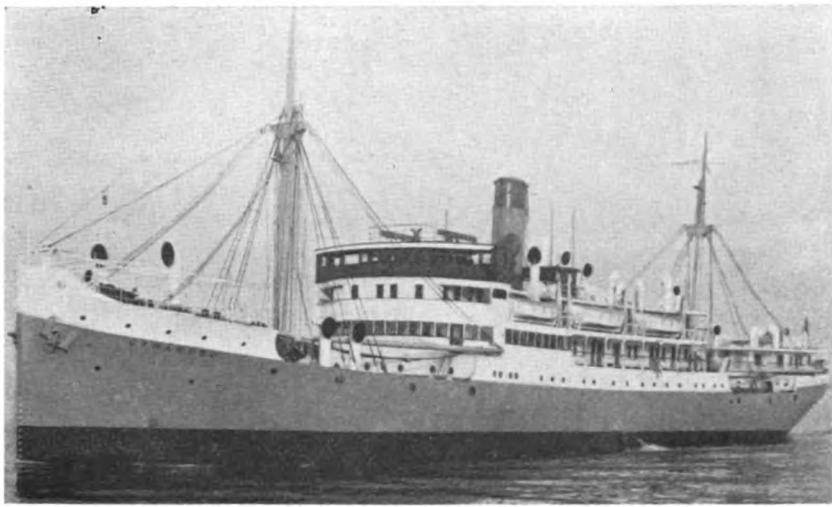
ENGINES & GENERATING SETS

GENERATORS

MOTORS

SWITCHBOARDS

Please mention MARINE REVIEW when writing to Advertisers



**Foreign
Trading
Passenger
Liner
Carabobo**

Name of vessel—CARABOBO

Owner—Red "D" Line; Bliss, Dallet & Co.

Builder—New York Shipbuilding Corp., Camden, N. J.

Naval Architect—Theodore E. Ferris, New York.

When Launched—Oct. 27, 1923; when completed, Dec. 28, 1923.

Classification—American Bureau of Shipping A. I. E.

HULL PARTICULARS

Length over all, 320 feet, 1 $\frac{1}{2}$ inches; length between perpendiculars, 305 feet; breadth molded, 48 feet; depth molded, 21 feet 10 inches; draft loaded, 18 feet 1 $\frac{3}{4}$ inches; displacement loaded, 5680 tons; gross tonnage, 2916; net tonnage, 1718; passenger capacity, first 59, second 26; cargo capacity, tons, 2200; cargo capacity, cubic feet, 138,291; bunker fuel capacity in tons, 648; speed at sea, 12 $\frac{1}{2}$ knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, W. & A. Fletcher, Hoboken, N. J.; number 1 high press.

ahead and 1 high press. astern on port shaft, one low press. ahead and astern on starboard shaft; type, Parsons double reduction geared turbines; size, 2200 shaft horsepower.

Boilers—Number 2; name of maker, New York Shipbuilding Corp.; type S. E. Scotch; size, 15 feet 8 inches diameter, 11 feet long; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp., New York Shipbuilding Corp.

Windlasses—Hyde Windlass Co.

Winches—Lidgerwood Mfg. Co.

Steering Engine—Hyde Windlass Co.

Propellers—New York Shipbuilding Corp.

Refrigerating Mach.—Brunswick-Kroeschell.

Oil Burning Equipment—Bethlehem-Dahl.

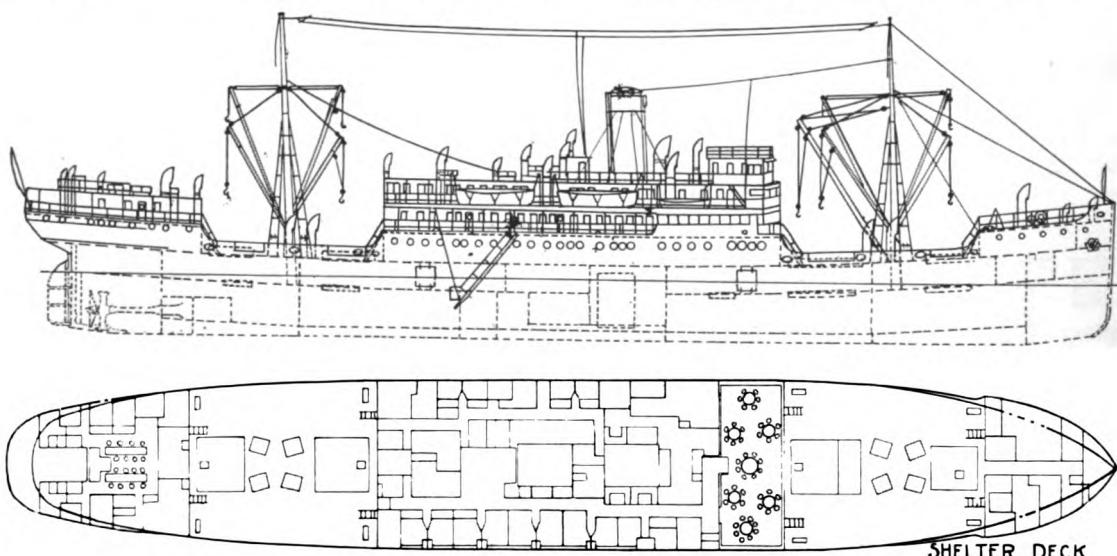
Electric Generators—Kearfoot Engineering Co.

Life Saving Equip.—Welin Boat & Davit Corp.

Oil Purifier—De Laval Separator Co.

Reduction Gears—De Laval Steam Turbine Co.

Radio Apparatus—Radio Corp. of America.



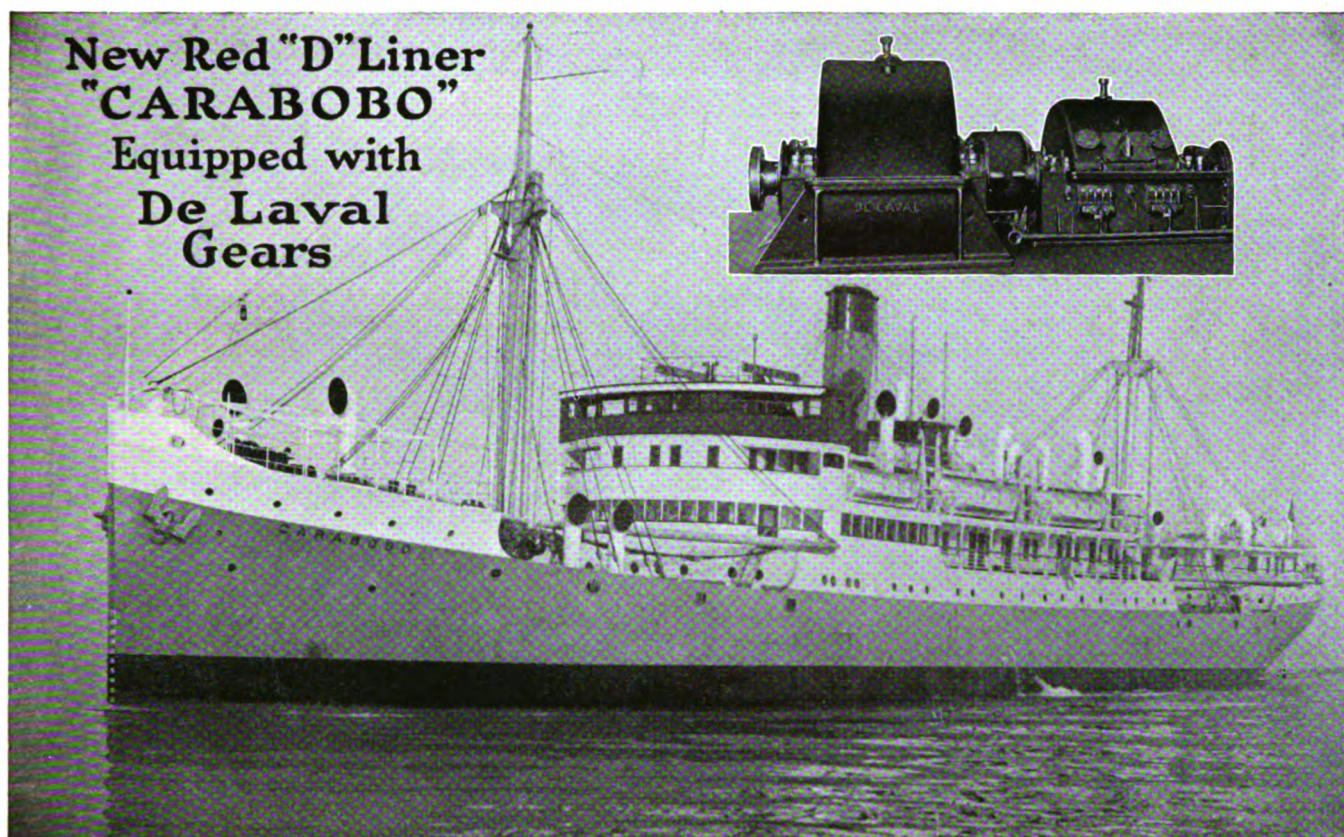


Photo by N. Y. Shipbuilding Co.

THIS fine new twin screw vessel built by the N. Y. Shipbuilding Co., for the Red D Line is 320 ft. long and 48 ft. beam, with a displacement of 7,000 tons. The ample deck space and large cargo capacity provided is due in part to the use of geared turbines, which occupy less space and weigh less than would any other type of drive. The two turbines are designed to develop a total of 2200 H.P. and to drive the vessel at 13 knots. The CARABOBO will run between New York and Venezuela.

Other recent crack passenger vessels already equipped or to be equipped with De Laval reduction gears are the MUNARGO, built by the N. Y. Shipbuilding Co., for the New York-West Indies Route, in which a 5800 H.P. De Laval double reduction gear is installed, the two new passenger vessels BOSTON and NEW YORK just launched by the Eastern Steamship Co., each equipped with two 3800 H.P. De Laval reduction gears and the new Southern Pacific liner BIENVILLE to be built by the Todd Drydock & Construction Co., of Tacoma, being equipped with a complete De Laval propelling unit rated at 7100 H.P., consisting of a compound steam turbine with double reduction gears.

The Federal Shipbuilding Co., has also just

ordered a 5500 H.P. De Laval geared marine turbine to be installed in a freighter being built for the Southern Pacific Co.

The 35 knot scout cruisers RICHMOND and TRENTON, built by William Cramp & Sons Ship & Engine Building Co., are also equipped with De Laval Gears. The four screws of each vessel are driven through four De Laval reduction gears of the two pinion type—each designed to transmit 22,500 H.P., and on the recent official trial trips these gears were reported as highly satisfactory. Cramp's are building five of these vessels altogether, all to have De Laval gears. The third vessel, the MEMPHIS, will be placed in commission at an early date.

Ask for Catalog M-52.

DeLaval

Steam Turbine Co., Trenton, N.J.

LOCAL OFFICES:
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 Montreal Birmingham Boston New Orleans Philadelphia Pittsburgh Salt Lake City San Francisco Seattle Toronto Vancouver 367-B

Please mention MARINE REVIEW when writing to Advertisers



**Delaware
River
Ferry
Ocean City**

Name of vessel—Ferryboat CHELSEA (sister ship OCEAN CITY.)

Owner—Philadelphia & Reading Railroad Co.

Builder—Pusey & Jones Co., Wilmington, Del.

Naval Architect—A. M. Main.

When Launched—July 12, 1923; when completed—Sept. 12, 1923.

HULL PARTICULARS

Length over all, 200 feet; length between perpendiculars, 181 feet 3 inches; breadth over guards, 55 feet 6 inches; depth molded, 16 feet 3 inches; draft loaded, 10 feet; displacement loaded, 901 tons fresh water; gross tonnage, 1028; net tonnage, 694; passenger capacity, 485 first; bunker fuel capacity in tons, 40; speed, 14 miles.

MACHINERY PARTICULARS

Main Engine—Name of builder, Pusey & Jones Co.; number 1; type, twin compounds; size 17 x 34 and 24-inch stroke.

Boilers—Number 2; name of maker, Bethle-

hem Shipbuilding Corp.; type, gunboat; size, 10 feet x 20 feet 9 inches; 150 pounds working pressure; fuel, coal.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Warren Steam Pump Co., main feed, fire and donkey pump and air pump, circulating pump; Pusey & Jones fan pump connected to Engberg vertical engine.

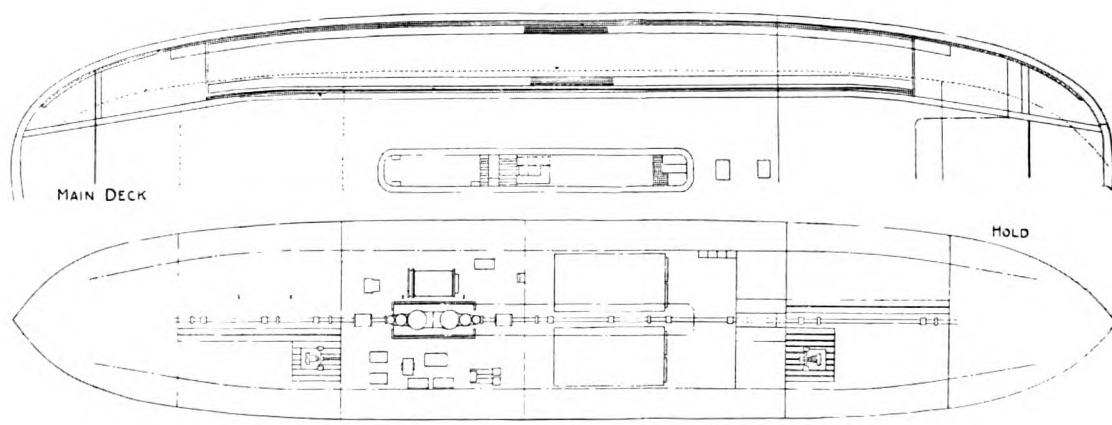
Windlass—American Engineering Co.

Steering Engine—American Engineering Co.

Propellers—Federal Steel Foundry Co., Chester, Pa.

Electric Generators—(2) Terry turbo-generators.

The above vessel and duplicate ferryboat OCEAN CITY built for service between Philadelphia and Camden, N. J.



Zinc



Particularly adapted for MARINE use

EVERY quality that makes Zinc such a wonderful pigment for use ashore makes it doubly valuable on or near the water.

Marine service demands a paint that will resist salt air, dampness and the blinding sunlight of the open sea.

Zinc content paints resist all three. If you mix your own paint, you can obtain Zinc Oxide in a very usable form called

MAPAZ

Mapaz No. 1 is The New Jersey Zinc Company's pure Zinc Oxide ground in refined linseed oil. It reduces chalking, improves the lustre, increases the whiteness of white paint, makes purer the colors of tinted paints, and makes both the colors and the paint film last longer.

Mapaz No. 1 is ground according to our formula by the following licensed manufacturers:

**Master Painters Supply Co., Inc., 160 Front St., N.Y.
Peaslee-Gaulbert Co., Incorporated, Louisville, Ky.,
Atlanta, Ga., Dallas, Texas
U. S. Gutta Percha Paint Co., Providence, R. I.**

 **The New Jersey Zinc Company** 

Please mention MARINE REVIEW when writing to Advertisers

**Sea Going Steel Tonnage, Completed, Building and Contracted for in American Shipyards
From Jan. 1, 1923 to April 30, 1924**

Vessel	Yard	Type	Class	Gross	Owners	Mach.	H.P.	Len.	Brdt.	Dep.	Fuel	Remarks	Status	
Alaska	Todd D.D. & C. Co.	Pass.	R	4658	Alaska S. S. Co.	Recip.	5600	365	49	26	Oil	Pass. Serv. Pacific.....	Completed	
Alaska Standard	Bethlehem S. B. Corp.	Tank.	R	1274	S. O. Co. (Cal.)	Oil Elec.	....	210	40	16	Oil	Trans. oil in bulk	Completed
Aleghany	Federal S. B. Co.	P. & C.	R	5486	Mer. & Minen T. Co.	Recip.	2700	350	52	35	Oil	Pass. & Frt. Atl. Coast	Completed	
B. H. Taylor	American S. B. Co.	C	G. L.	7318	Bradley Trans. Co.	Recip.	2600	552	60	30	Coal	Gt. Lakes Frt. Serv.	Completed	
Berkshire	Federal S. B. Co.	P. & C.	R	5486	Mer. & Minen T. Co.	Recip.	2700	350	52	35	Oil	Pass. & Frt. Atl. Coast.	Completed	
Boston	Bethlehem S. B. Corp.	Pass.	R	5100	Eastern S. S. Co.	Turbine	....	385	72	23	Oil	Pass. Serv. Bos. & N. Y.	Launched
Carabobo	New York S. B. Co.	P. & C.	R	2916	Red D Line	Turbine	....	305	48	21	Oil	Pass. & Frt. N.Y. & Venezuela	Completed
Charles M. Schwab	American S. B. Co.	C	G. L.	7935	Pick. Mather & Co.	Recip.	2300	580	60	32	Coal	Gt. Lakes Frt. Serv.	Completed	
Chelsea	Pusey & Jones Co.	Ferry	....	1023	Reading R. R.	Recip.	1100	200	55	6	Coal	Delaware River Serv.	Completed
Cherokee	Newport News	P. & C.	R	5300	Clyde S. S. Co.	Turbine	4750	402	54	31	Oil	Pass. & Frt. Coastwise....	Under con.	
Chiloe	Bethlehem S. B. Corp.	T. & O.	R	13154	Ore S. S. Co.	Recip.	....	550	72	44	Oil	Comb. Ore Car. & Tank.	Completed
City of Birmingham	Newport News	P. & C.	R	5861	Ocean S. S. Co.	Recip.	2900	382	52	35	Coal	Pass. & Frt. Atl. Coast.	Completed	
City of Chattanooga	Newport News	P. & C.	R	5861	Ocean S. S. Co.	Recip.	2900	382	52	35	Coal	Pass. & Frt. Atl. Coast.	Completed	
Cornish	Bethlehem S. B. Corp.	C	....	1827	Eastern S. S. Co.	Recip.	1300	233	38	17	Coal	Frt. Atlantic Coastwise.	Completed
Dickenson	Sun S.B. & D.D. Co.	Cable	L	831	Com. Pacif. Cable Co.	Recip.	850	169	30	22	Oil	Cable Ship.	Completed	
Eurana	New York S. B. Co.	Tank.	D	6651	Builders Account	Recip.	3000	420	57	32	Oil	Transporting oil in bulk.	Completed	
Frontenac	Great Lakes Eng. Whs.	C	G. L.	8158	Clev. Cliffs Ir. Co.	Recip.	1900	580	60	32	Coal	Gt. Lakes Frt. Serv.	Completed	
George H. Walker	Dravo Contracting Co.	C. F.	....	2062	N. O., Tex. & Mex. R.R.	Recip.	600	340	56	11	Cor O	Inland Waters (side wheel).	Completed
George W. Loft	Staten Island S.B. Co.	Ferry	....	871	City of New York	Turb. Elec.	2300	214	45	18	Oil	Pass. Ferry N.Y. & Brooklyn	Completed
Greater Buffalo	American S. B. Co.	Pass.	G. L.	7739	D. & C. Nav. Co.	Recip.	10000	505	58	23	Coal	Pass. Serv. Gt. Lakes.	Launched	
Greater Detroit	American S. B. Co.	Pass.	G. L.	7739	D. & C. Nav. Co.	Recip.	10000	505	58	23	Coal	Pass. Serv. Gt. Lakes.	Launched	
Haleakala	Sun S.B. & D.D. Co.	P. & C.	R	5958	Int. Id. St. Nav. Co.	Recip.	5600	360	46	32	Oil	Pass. & Frt. Serv. Honolulu.	Completed	
Hayward	Los Angeles S.B. & D.D. Co.	Ferry	R	1653	San. Fran., Oak. Term. R.R.	Turb. Elec.	1350	225	42	19	Oil	Pass. Ferry Pacific Coast.	Completed	
Ialander	Batch Iron Whs.	Pass.	....	1090	N. Bed. M. V. & N.S.B. Co.	Recip.	1100	200	55	6	Coal	Pass. Serv. Atlantic Coast.	Completed
John W. Boardman	Toledo S. B. Co.	C	G. L.	4011	Huron Port. Cement Co.	Recip.	....	334	50	36	Coal	Gt. Lakes Frt. Serv.	Completed
Joshua A. Hatfield	American S. B. Co.	C	G. L.	7939	Pittsburgh S. S. Co.	Recip.	2300	580	60	32	Coal	Gt. Lakes Frt. Serv.	Completed	
Lebore	Bethlehem S. B. Corp.	T. & O.	R	13500	Ore S. S. Co. Mgrs.	Recip.	....	550	72	44	Oil	Comb. Ore Car. & Tank.	Completed
New York	Newport News	P. & C.	R	5100	Eastern S. S. Co.	Turbine	....	385	72	23	Oil	Pass. Serv. Bos. & N. Y.	Launched
Ocean City	Pusey & Jones Co.	Ferry	....	1028	Reading R. R.	Recip.	1100	200	55	6	Coal	Delaware River serv.	Completed
Pennsylvania Sun	Sun S.B. & D.D. Co.	Tank.	R	8862	Sun Oil Co.	Recip.	4300	480	66	37	Oil	Transporting oil in bulk.	Completed	
Richard V. Lindesbury	American S. B. Co.	C	G. L.	7939	Pittsburgh S. S. Co.	Recip.	2200	580	60	32	Coal	Gt. Lakes Frt. Serv.	Completed	
Rodman Wanamaker	Staten Island S. B. Co.	Ferry	875	City of New York	Turb. Elec.	2200	214	3	45	18	Oil	Pass. Ferry N. Y. & Brooklyn.	Completed
San Leandro	Los Angeles S.B. & D.D. Co.	Ferry	R	1653	San. Fran., Oak. Term. R.R.	Turb. Elec.	1350	225	42	19	Oil	Ferry Pacific Coast.	Completed	
Seminole	Newport News	P. & C.	R	5200	Clyde S. S. Co.	Turbine	4750	402	54	31	Oil	Frt. Gt. Lakes, St. Law. & Atl.	Under con.	
Standard Service	Bethlehem S. B. Corp.	Tank.	R	1271	S. O. Co. of Cal.	Oil Elec.	600	210	40	16	Oil	Transporting oil in bulk.	Completed	
State of Delaware	Pusey & Jones Co.	Pass.	R	814	Wilmington S. B. Co.	Recip.	2700	219	48	9	Oil	Pass. Serv. Delaware River.	Completed	
State of Pennsylvania	Staten Island S. B. Co.	Pass.	R	814	Wilmington S. B. Co.	Recip.	2700	219	48	9	Oil	Pass. Serv. Delaware River.	Completed	
Twin Cities	Pusey & Jones Co.	P. & C.	R	1783	Seaboard Bay Line	Recip.	2860	330	58	19	Coal	Pass. & Cargo Chas. & Atl. C.	Completed	
Twin Ports	Federal S. B. Co.	C	R	1695	U. S. Steel Pro. Co.	Diesel	750	250	42	9	Oil	Frt. Gt. Lakes, St. Law. & Atl.	Completed	
Steelvendor	Federal S. B. Co.	C	R	1695	U. S. Steel Pro. Co.	Diesel	750	250	42	9	Oil	Frt. Gt. Lakes, St. Law. & Atl.	Completed	
Troy Society	Sun S.B. & D.D. Co.	Tank.	R	943	Standard Trans. Co.	Diesel	600	246	37	6	Oil	Transportation of oil in bulk.	Completed	
State of Pennsylvania	Great Lakes Eng. Whs.	C	G. L.	1460	Minn. Atlantic T. Co.	Oil Elec.	750	258	42	18	Oil	Cargo Gt. Lakes, Canal & Atl. C.	Completed	
Twin Ports	Great Lakes Eng. Whs.	C	G. L.	1460	Minn. Atlantic T. Co.	Oil Elec.	750	258	42	18	Oil	Cargo Gt. Lakes, Canal & Atl. C.	Completed	
W. R. Hearst	Staten Island S. B. Co.	Ferry	875	City of New York	Turb. Elec.	2200	214	3	45	18	Oil	Pass. Ferry N. Y. & Brooklyn.	Completed
William H. Warner	American S. B. Co.	C	G. L.	5057	Panda S. S. Co.	Recip.	2200	580	60	32	Coal	Gt. Lakes Frt. Serv.	Completed	
Will K. Field	Toledo S. B. Co.	C	G. L.	8200	Rheas S. S. Co.	Recip.	2500	580	60	32	Coal	Gt. Lakes Frt. Serv.	Completed	
Willow	Chas. Ward Eng. Works	Tender	River	....	Light House Service	Recip.	200	65	8	Oil	Tender, Miss. River.	Bids in	
Wilton	Bethlehem S. B. Corp.	C	....	1827	Eastern S. S. Co.	Recip.	....	233	38	17	Coal	Frt. Atlantic Coastwise.	Completed

Yosemite.....	Bethlehem S. B. Corp.....	Ferry	....	1782 Southern Pacific Co.	Turbine	42	17 3 Coal	Pass. Ferry Pacific Coast.
Name Unknown.....	Federal S. B. Co.....	C	....	7500 Southern Pacific Co.	Turbine	42	37 Oil	Frt. Coastwise.
Henry Ford II.....	American S. B. Co.....	C	....	8500 Ford Motor Co.	Diesel	56	37 Oil	Gt. Lakes Frt. Serv.
Benson Ford.....	Great Lakes Eng. Wks.....	C	....	8500 Ford Motor Co.	Diesel	62	32 Oil	Gt. Lakes Frt. Serv.
Hull No. 247.....	Great Lakes Eng. Wks.....	C	....	8500 H. K. Oakes.....	Recip.	....	32 Coal	Gt. Lakes Frt. Serv.
Name Unknown.....	Manitowoc S. B. Co.....	C. F.	....	3000 Pere Marquette R. R.	Recip.	3000 586	62	Under con.
Name Unknown.....	Manitowoc S. B. Co.....	C. F.	....	3000 Pere Marquette R. R.	Recip.	....	32 Coal	Railroad Car Ferry Gt. Lakes.
George Washington.....	Newport News.....	Pass.	....	4000 Old Dominion S. S. Co.	Turbine	3000 360	21 6 Coal	Railroad Car Ferry Gt. Lakes.
Robert E. Lee.....	Newport News.....	Pass.	....	4000 Old Dominion S. S. Co.	Turbine	4750 389	21 6 Coal	Railroad Car Ferry Gt. Lakes.
Priscilla.....	New York S. B. Co.....	Tank.	D	4000 Builders Account.....	Recip.	4750 389	20 6 Oil	Pass. & Cargo Atl. Coastwise.
Name Unknown.....	Sun S.B. & D.D. Co.	Tank.	R	8533 Sun Oil Co.	Recip.	3000 420	57	Under con.
Bienville.....	Todd D.D. & Cons. Co.	Pass.	R	8500 Southern Pacific Co.	Turbine	3000 480	37	Completed
Worrel Clarkson.....	Toledo S. B. Co.	C	G. L.	8400 Kinsman Transit Co.	Recip.	6000 427	57	Transportation of oil in bulk.
Name Unknown.....	Pusey & Jones Co.	Pass.	Bay	1600 Norfolk & Wash. S. B. Co.	Recip.	2000 580	32 Coal	Pass. & Cargo, Atl. Coast & Gulf.
Alexander Hamilton.....	Bethlehem S. B. Corp.	R. Pass.	....	Hudson River Day Line.....	Recip.	2500 305	42 5	Under con.
Unkown.....	Midland Barge Co.	Dredge	....	E. T. Slider.....	Oil Elec.	....	13 8 Oil	Pass. & Frt., Norfolk & Wash.
J. H. Senior.....	Newport News.....	Tank.	....	1135 S. O. Co. of N. J.	Oil Elec.	....	Under con.	Under con.
Schenectady Socony.....	Sun S. B. & D. D. Co.	Tank.	....	1199 S. O. Co. of N. Y.	Oil Eng.	....	Under con.	Under con.
Amsterdam Socony.....	Sun S. B. & D. D. Co.	Tank.	....	1199 S. O. Co. of N. Y.	Oil Eng.	....	Under con.	Under con.
Rome Socony.....	Sun S. B. & D. D. Co.	Tank.	....	1199 S. O. Co. of N. Y.	Oil Eng.	....	Under con.	Under con.
Oswego Socony.....	Sun S. B. & D. D. Co.	Tank.	....	1199 S. O. Co. of N. Y.	Oil Eng.	....	Under con.	Under con.
Burlington Socony.....	Sun S. B. & D. D. Co.	Tank.	....	1199 S. O. Co. of N. Y.	Oil Eng.	....	Under con.	Under con.
Providence Socony.....	New York S. B. Co.	Tank.	....	1199 S. O. Co. of N. Y.	Oil Eng.	....	Under con.	Under con.
Hartford Socony.....	New York S. B. Co.	Tank.	....	1199 S. O. Co. of N. Y.	Oil Eng.	....	Under con.	Under con.
Boston Socony.....	New York S. B. Co.	Tank.	....	1199 S. O. Co. of N. Y.	Oil Eng.	....	Under con.	Under con.
Catalina.....	Los Angeles S.B. & D.D. Co. Pass.	....	....	Wilmington Trans. Co.	Recip.	....	Under con.	Under con.
A. Mackenzie.....	Sun S.B. & D.D. Co.	Dredge	....	(Wrigley).....	Oil Elec.	....	Under con.	Under con.
A. L. Marshall.....	Sun S.B. & D.D. Co.	Dredge	....	U. S. A. Engineers.....	Oil Elec.	....	Under con.	Under con.
Dan C. Kingman.....	Sun S.B. & D.D. Co.	Dredge	....	U. S. A. Engineers.....	Oil Elec.	....	Under con.	Under con.
Wm. T. Rossel.....	Sun S.B. & D.D. Co.	Dredge	....	U. S. A. Engineers.....	Oil Elec.	....	Under con.	Under con.
Wacouta.....	Dravo Contracting Co.	T. Boat S. Wheel	592	Joyce Watkins Co.	Recip.	....	Under con.	Under con.
Slack Barrett.....	Midland Barge Co.	T. Boat	....	Barrett Line.....	Recip.	....	Under con.	Under con.
Cincinnati.....	Midland Barge Co.	Pass.	....	Side Whl. 1056 Louisville Cinn. Packet Co.	Recip.	....	Under con.	Under con.
Unknown.....	Charles Ward Eng. Wks.	T. Boat St. Whl.	....	U. S. Engineers.....	Recip.	....	Under con.	Under con.
Deluge.....	Charles Ward Eng. Wks.	Dip. D.	....	U. S. Engineers.....	Recip.	....	Under con.	Under con.
Cape Girardeau.....	Johnson Jr. Wks.	Fire Bt.	....	City of New Orleans	Recip.	....	Under con.	Under con.
	Howard Shipyds. & Dr. Co.	Pass.	....	470 Eagle Packet Co. ....	....	....	Under con.	Under con.
No. 248.....	Gt. Lakes Eng. Wks.	C	G. L.	8000 Columbia S. S. Co.	Recip.	....	Under con.	Under con.
D. F. Hanlon.....	Eg. at Hanland D. & S. B. Co.	C	....	433 U.S.A. Trans. Serv.	Recip.	....	Under con.	Under con.
Gen. J. McD. Hyde.....	Charles Ward Eng. Wks.	Trans.	R	433 U.S.A. Trans. Serv.	Recip.	1050 150	28	Steel Ax. Sch.
Gen. F. M. Cox.....	Charles Ward Eng. Wks.	Trans.	R	Assoc. Oil Co.	Oil Eng.	1050 150	28	Completed
Unknown.....	Moore D.D. Co.	Tank.	....	Port of Portland, Oregon	Oil Elec.	....	Under con.	Under con.
Unknown.....	Wallace Equipment Co.	Dredge	....	Algiers Pub. Serv. Co. Inc.	Recip.	3400 236	50	Local Troop Transport.
Unknown.....	Howard Shipyds. & Dr. Co.	Ferry	....	New Orleans.....	....	150 6	67 Dia.	Trans. of oil in bulk.
Unknown.....	Howard Shipyds. & Dr. Co.	Ferry	....	Alg. Pub. S. Co., Inc., N. O. Recip.	....	....	12 9 Oil	Hydraulic Pipe Line Dredge.
Unknown.....	Bethlehem S.B. Corp.	Ferry	....	San Fran. & Rich. Trans. Co. Recip.	....	....	....	Ferry Service New Orleans.
Unknown.....	Bethlehem S.B. Corp.	Ferry	....	San Fran. & Rich. Trans. Co. Recip.	....	....	....	Pass. & Auto. Serv.
Unknown.....	Bethlehem S.B. Corp.	Ferry	....	San Fran. & Rich. Trans. Co. Recip.	....	....	....	Under con.
						....	....	Under con.

A very considerable number of tugs and smaller vessels have also been built, or are at present under construction.

No. 248.....	Gt. Lakes Eng. Wks.	C	G. L.	8000 Columbia S. S. Co.	Recip.	3000 592	62	32 Coal	Frt. Serv. on Gt. Lakes.
D. F. Hanlon.....	Eg. at Hanland D. & S. B. Co.	C	....	433 U.S.A. Trans. Serv.	Recip.	....	286	....	Lumber Trade Pacific Coast.
Gen. J. McD. Hyde.....	Charles Ward Eng. Wks.	Trans.	R	433 U.S.A. Trans. Serv.	Recip.	1050 150	28	13 Oil	Local Troop Transport.
Gen. F. M. Cox.....	Charles Ward Eng. Wks.	Trans.	R	Assoc. Oil Co.	Oil Eng.	1050 150	28	13 Oil	Local Troop Transport.
Unknown.....	Moore D.D. Co.	Tank.	....	Port of Portland, Oregon	Oil Elec.	....	....	....	Trans. of oil in bulk.
Unknown.....	Wallace Equipment Co.	Dredge	....	Algiers Pub. Serv. Co. Inc.	Recip.	....	....	....	River Towing.
Unknown.....	Howard Shipyds. & Dr. Co.	Ferry	....	New Orleans.....	....	....	....	....	Towing.
Unknown.....	Howard Shipyds. & Dr. Co.	Ferry	....	470 Eagle Packet Co. ....	....	....	....	....	Miss. River Pass. & Cargo.
Unknown.....	Gt. Lakes Eng. Wks.	C	....	U. S. A. Engineers.....	Oil Elec.	....	268 5	46	River & Harbor Dredging.
Dan C. Kingman.....	Sun S.B. & D.D. Co.	Dredge	....	U. S. A. Engineers.....	Oil Elec.	....	268 5	46	River & Harbor Dredging.
Wm. T. Rossel.....	Sun S.B. & D.D. Co.	Dredge	....	U. S. A. Engineers.....	Oil Elec.	....	268 5	46	River & Harbor Dredging.
Wacouta.....	Dravo Contracting Co.	T. Boat S. Wheel	592	Joyce Watkins Co.	Recip.	....	157 5	28 5	River Towing.
Slack Barrett.....	Midland Barge Co.	T. Boat	....	Barrett Line.....	Recip.	....	176	50	....
Cincinnati.....	Midland Barge Co.	Pass.	....	Side Whl. 1056 Louisville Cinn. Packet Co.	Recip.	....	291 6	45 6	....
Unknown.....	Charles Ward Eng. Wks.	T. Boat St. Whl.	....	U. S. Engineers.....	Recip.	....	136 7	29	....
Deluge.....	Charles Ward Eng. Wks.	Dip. D.	....	U. S. Engineers.....	Recip.	....	108	....	....
Cape Girardeau.....	Johnson Jr. Wks.	Fire Bt.	....	City of New Orleans	Recip.	....	138 6	29	....
	Howard Shipyds. & Dr. Co.	Pass.	....	470 Eagle Packet Co. ....	....	....	....	....	....
						....	....	....	Frt. River Serv.



Ocean-
Great Lakes
Motorship
Steelmotor

Name of vessel—STEELMOTOR (Sister ship STEEL-VENDOR).

Owner—U. S. Steel Products Co., New York.
Builder—Federal Shipbuilding Co., Kearny, N. J.
Naval Architect—Federal Shipbuilding Co.
When Launched—May 18, 1923; when completed
—June 21, 1923.

Classification—American Bureau, A. I. E. Coastwise.

HULL PARTICULARS

Length over all, 258 feet $3\frac{1}{8}$ inches; length between perpendiculars, 250 feet; breadth molded, 42 feet 9 inches; depth molded, 20 feet; draft loaded, 16 feet; displacement loaded, 4070 tons salt water, gross tonnage, 1695; net tonnage, 973; deadweight capacity, tons, 2717; cargo capacity, cubic feet, 113,440 bales; bunker fuel capacity in tons, 82; speed, 8½ knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, McIntosh & Seymour; number 1; type, 6-cylinder diesel, 4-cycle; size, 22 x 32 inches, 750 brake horsepower.

For handling cargo instead of the usual winches, each hatch is served by a five-ton, 3-motor, variable radius, fixed base revolving crane, of Brown Hoist manufacture.

Boilers—Number 1; name of maker, Federal Shipbuilding Co.; type vertical donkey; size, 5 feet 3 inches diameter, 9 feet high, 355 square feet heating surface; fuel, oil.

Auxiliary Oil Engine—Number 3; size, (2) Worthington 90 brake horsepower, 60 kilowatt; (1) Mianus 7½ brake horsepower, 5 kilowatt.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp.
Windlasses—Hyde, electric spur geared.

Winches—Hyde, electric mooring machines (4).

Steering Engine—Hyde, electric, quadrant type.

Refrigerating Machinery—½ ton Brunswick, electric drive.

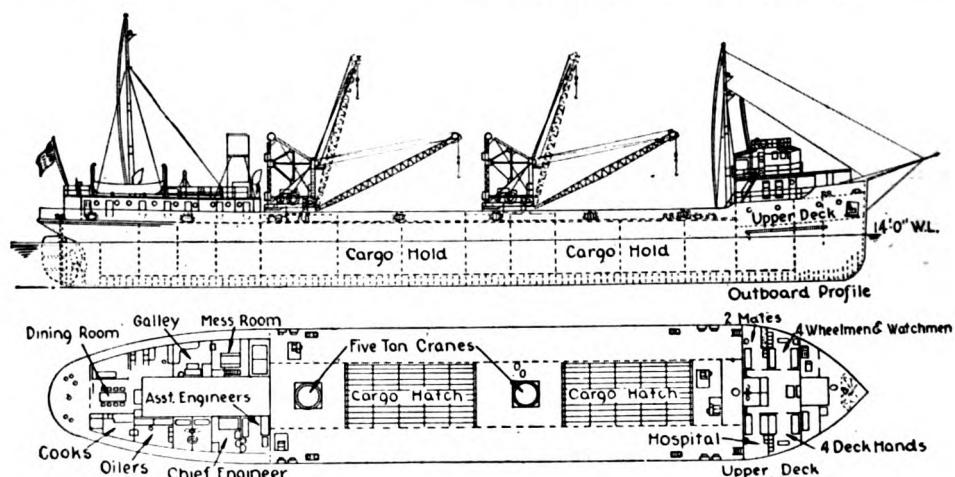
Oil Burning Equipment—Schutte & Koerting.

Electric Generators—Diehl Mfg. Co.

Life Saving Equip.—Welin Boat & Davit Corp.

Oil Purifier—De Laval Separator Co.

The STEELMOTOR and her sister vessel the STEEL-VENDOR are freight vessels for service on the Great Lakes, St. Lawrence and ocean coastwise.





Mississippi
River
Carferry
Geo. H. Walker

Name of Vessel—GEORGE H. WALKER
Owner—Gulf Coast Lines, Houston, Tex. (New Orleans, Texas & Mexico Railway Co.).
Builder—Dravo Contracting Co., Pittsburgh.
Naval Architect—A. H. Coyle, representing railway company.
When Launched—April 20, 1923, when completed—Sept. 22, 1923.
Classification—Not classified.

HULL PARTICULARS

Length overall, 345 feet; length between perpendiculars, 340 feet; breadth molded, 56 feet; depth molded, 11 feet; draft loaded, 6 feet; displacement loaded, 3000 short tons; gross tonnage, 2062; net tonnage, 1987; cargo capacity, 11 pullman cars or 25 freight cars; bunker fuel capacity in short tons, 170; speed, 9 statute miles loaded.

MACHINERY PARTICULARS

Main Engine—Name of builder, Dravo Contracting Co., number, 2; type, noncondensing, 2-cylinder, single expansion, with Joy valve gear; size,

18 inch diameter and 36-inch stroke; 1600 horsepower.

Boilers—Number, 4; name of maker, Coatesville Boiler Works; size, 72 inch diameter and 18-feet long; heating surface, 7,520 square feet; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp.

Steering Engine—Marion Steam Shovel Co., Marion, O.

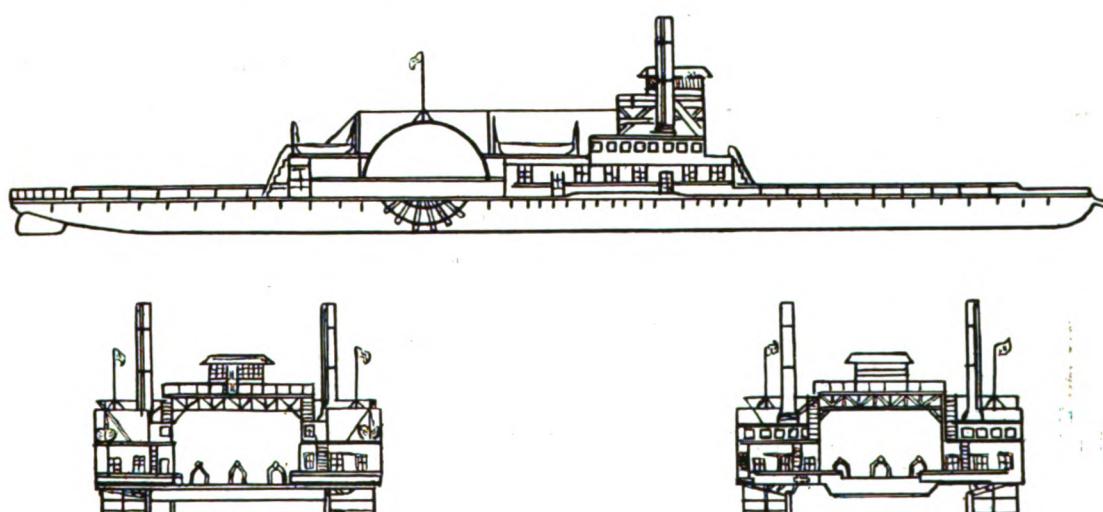
Propellers—Side wheels 31.5 feet diameter, buckets 36 x 14 inches.

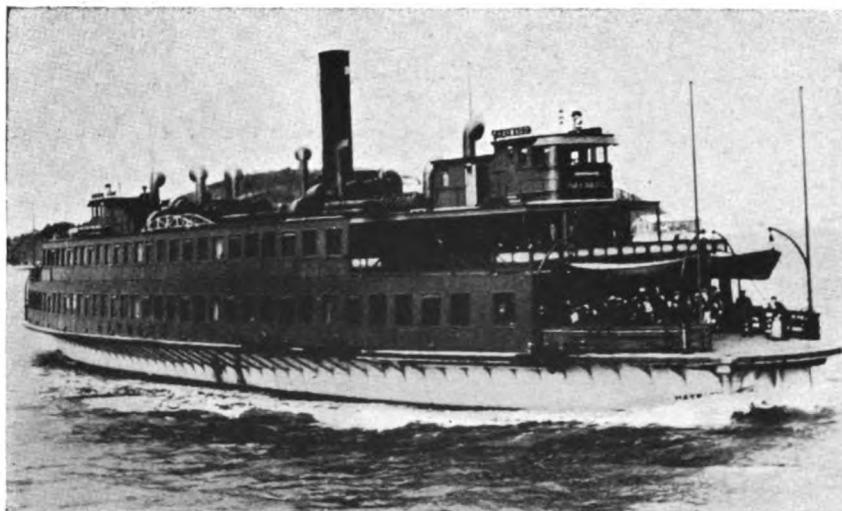
Oil Burning Equipment—B. P. Lientz & Co.

Electric Generators—General Electric Co.

Davits—Welin Boat & Davit Corp.

This boat is built of steel throughout, and is designed to carry 25 freight cars or 11 coaches. There are three tracks with cross overs. Now in service between Baton Rouge, La., and Anchorage, La.





Electric Driven Ferry Hayward

Name of Vessel—HAYWARD, sister ship SAN LEANDRO

Owner—San Francisco Oakland Terminal Railways, Oakland, Cal.

Builder—Los Angeles Shipbuilding & Dry Dock Corp., San Pedro, Cal.

Naval Architect—John B. Matthews, San Francisco.

When Launched—Feb. 15, 1923; when completed, May 30, 1923.

Classification—American Bureau of Shipping.

HULL PARTICULARS

Length overall, 240 feet 1 inch; length between perpendiculars 225 feet; breadth molded, 42 feet; depth molded, 19 feet 6 inches; draft loaded 11 feet 6 inches; displacement loaded, 1375 tons; gross tonnage, 1643; net tonnage, 1045; passenger capacity, ferry, 3300; bunker fuel capacity in tons, two fuel oil tanks, 8568 gallon total capacity; speed, 13½ knots

MACHINERY PARTICULARS

Main Engine—Three-stage Curtis turbo-generator; name of builder, General Electric Co.; number 1 turbine, two main driving motors; size, 1200 shaft horsepower driving motor.

Boilers—Number 2; name of maker, Babcock & Wilcox Co.; type, water tube; size, 5094 square feet combined heating surface; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp. and C. H. Wheeler.

Windlasses—Two hand capstan.

Steering Engine—Allan Cunningham Co., Seattle.

Propellers—Solid steel, Los Angeles Shipbuilding & Drydock Corp.

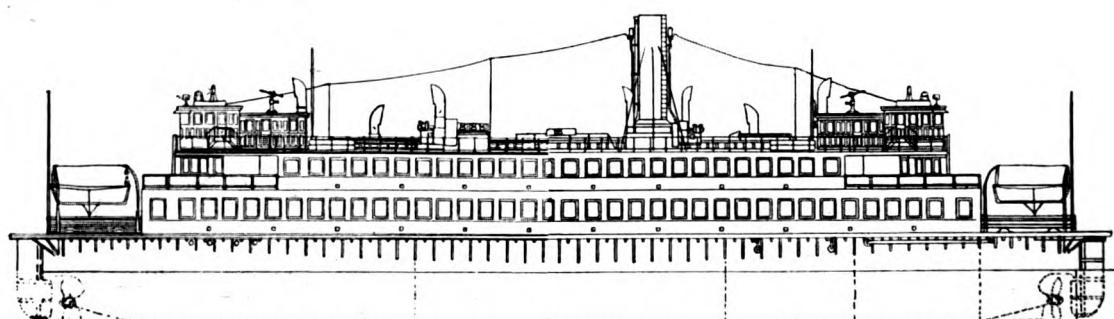
Oil Burning Equipment—Coen Co.

Superheaters—Babcock & Wilcox Co.

Electric Generators—General Electric Co.

Oil Purifier—De Laval Separator Co.

This arrangement and type of machinery for steam ferry boat purposes is a new departure. The ship is a double ended steel ferry, propelled by three stage, 1100 kilowatt Curtis turbine, 3600 revolutions per minute, four to one gear reduction, connecting 1000 kilowatt generator and 75 kilowatt excitor, power controlled through Ward-Leonard system of control to 1200 shaft horsepower motors, with forward motors idling, making 13 knots an hour. On Feb. 10, 1924, she completed six months continuous service, making 8940 trips or 25,447 boat miles, or an average of 50 trips per day.





**Lake,
Canal,
Ocean
Freighter
Twin Ports**

Name of Vessel—TWIN PORTS, sister ship TWIN CITIES.

Owner—Minnesota-Atlantic Transit Co., Duluth, Minn.

Builder—Great Lakes Engineering Works, Ashland, O.

Naval Architect—Henry Penton, Cleveland.

When completed—Fall, 1923.

Classification—American Bureau of Shipping for lake and coastwise service.

HULL PARTICULARS

Length overall, 258 feet; length between perpendiculars, 250 feet; breadth molded, 42 feet; depth molded, 18 feet 9 inches; draft loaded, barge canal 10 feet, coastwise 13 feet 7 inches; displacement loaded, canal, 2635 net tons, coastwise, 3365 long tons, salt water; gross tonnage, 1460; net tonnage, 840; deadweight capacity, canal draft 1500 net tons, at sea 2600 net tons; cargo capacity, cubic feet, bulk 95,820, bale 93,550; bunker fuel oil capacity in net tons, 95.8; speed loaded, 10 statute miles per hour.

MACHINERY PARTICULARS

Main Engine—Diesel-electric; name of builder, Lombard Governor Co., Ashland, Mass.; number,

2; size, 6-cylinder, 375 brake horsepower, 4-cycle, air injection diesel; direct-connected to 250 kilowatt, 230-volt, direct current generators. Two propelling motors, direct connected to propeller shafts, are 250 shaft horsepower each.

With Oil Engine Main Drive—Number (auxiliary oil engine) 1; size, 2-cylinder, 60 brake horsepower, 4-cycle, air injection, diesel; make, Lombard Governor Co.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Union Steam Pump Co., circulating, fire and general service, fuel oil transfer, lubricating oil; Blackmere Rotary Pump Co., ballast and bilge.

Windlasses—American Engineering Co.

Capstan—American Engineering Co.

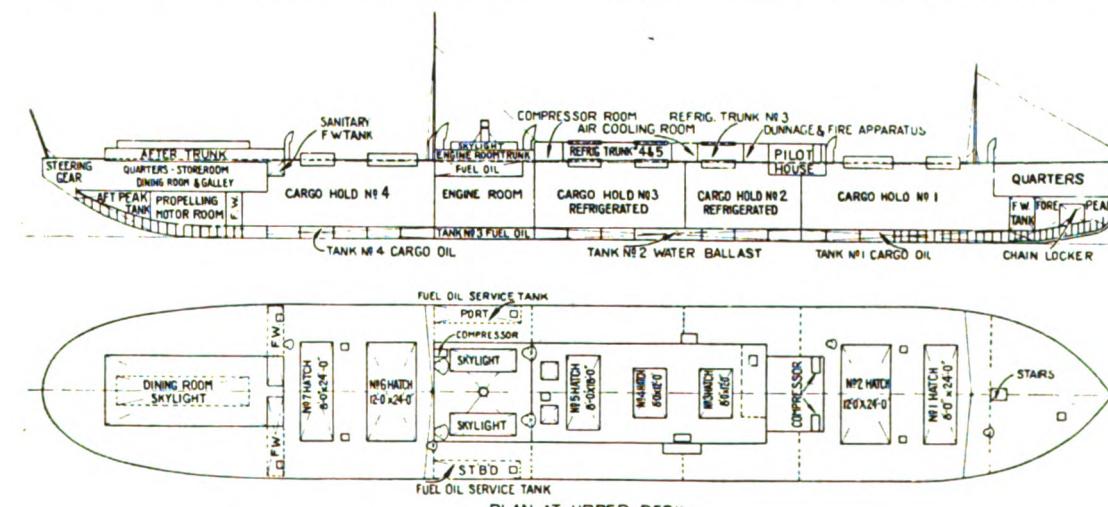
Steering Engine—Hyde Windlass Co.

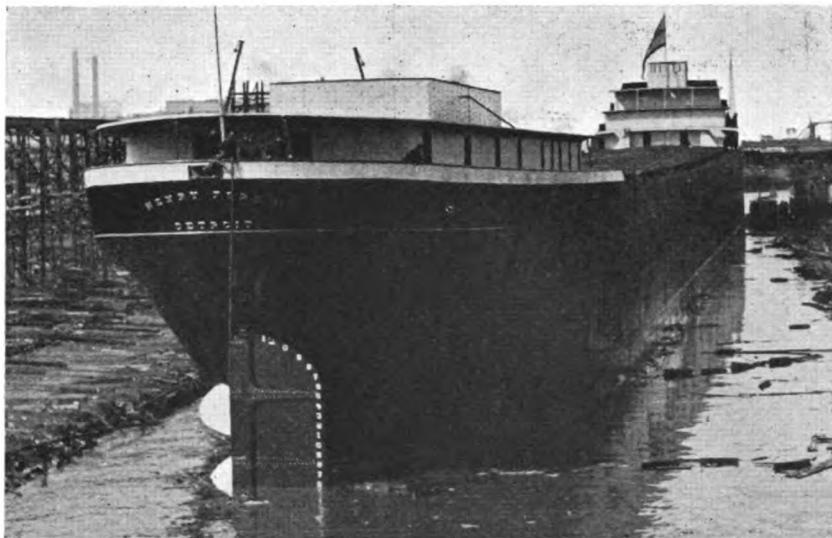
Propellers—Great Lakes Engineering Works.

Refrigerating Mach.—Brunswick-Kroeschell.

Electric Generators—General Electric Co.

Operate from Duluth through Great Lakes to Oswego, N. Y., and by barge canal to New York. In winter, adapted for coastwise and West Indies.





**Great Lakes
Bulk Freight
Motorship
Henry Ford II**

Name of Vessel—HENRY FORD II, sister ship BENSON FORD.

Owner—Ford Motor Co.

Builder—American Shipbuilding Co., sister ship building by Great Lakes Engineering Works, Detroit.

When Launched—March 1, 1924; when completed, building.

Classification—Lloyds.

HULL PARTICULARS

Length overall, 611 feet; length between perpendiculars, 590 feet; breadth molded, 62 feet; depth molded, 32 feet.

MACHINERY PARTICULARS

Main Engine—Diesel; name of builder, Sun Shipbuilding & Dry Dock Co.; number 1; type opposed piston, 2-cycle, single acting, solid fuel injection; size, 4-power cylinders, 23½ inches diameter and 91 inches combined stroke, 3200 shaft horsepower, 85 revolutions per minute.

With Oil Engine Main Drive—Number, auxiliary oil engine) 2; size, 450 shaft horsepower, 2-

cycle, 6-cylinder, 15¼ inches diameter and 16 inches stroke, 275 revolutions per minute, direct-connected to 300-kilowatt generators; make, Worthington Pump & Machinery Corp.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Union Steam Pump Co., Battle Creek, Mich.

Windlasses—American Shipbuilding Co.

Winches—Lidgerwood Mfg. Co.

Steering Engine—American Shipbuilding Co., Benson Electric Co. control.

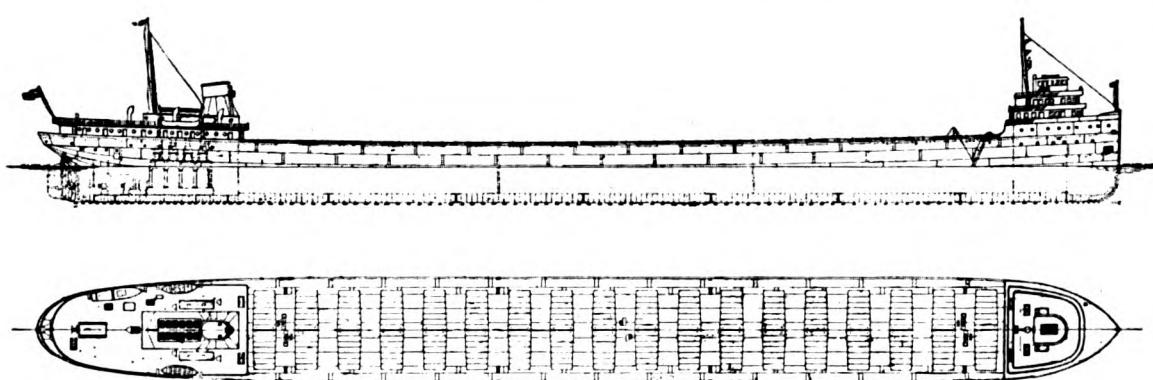
Electric Generators—Crocker-Wheeler Co.

Radio Apparatus—Radio Corp. of America

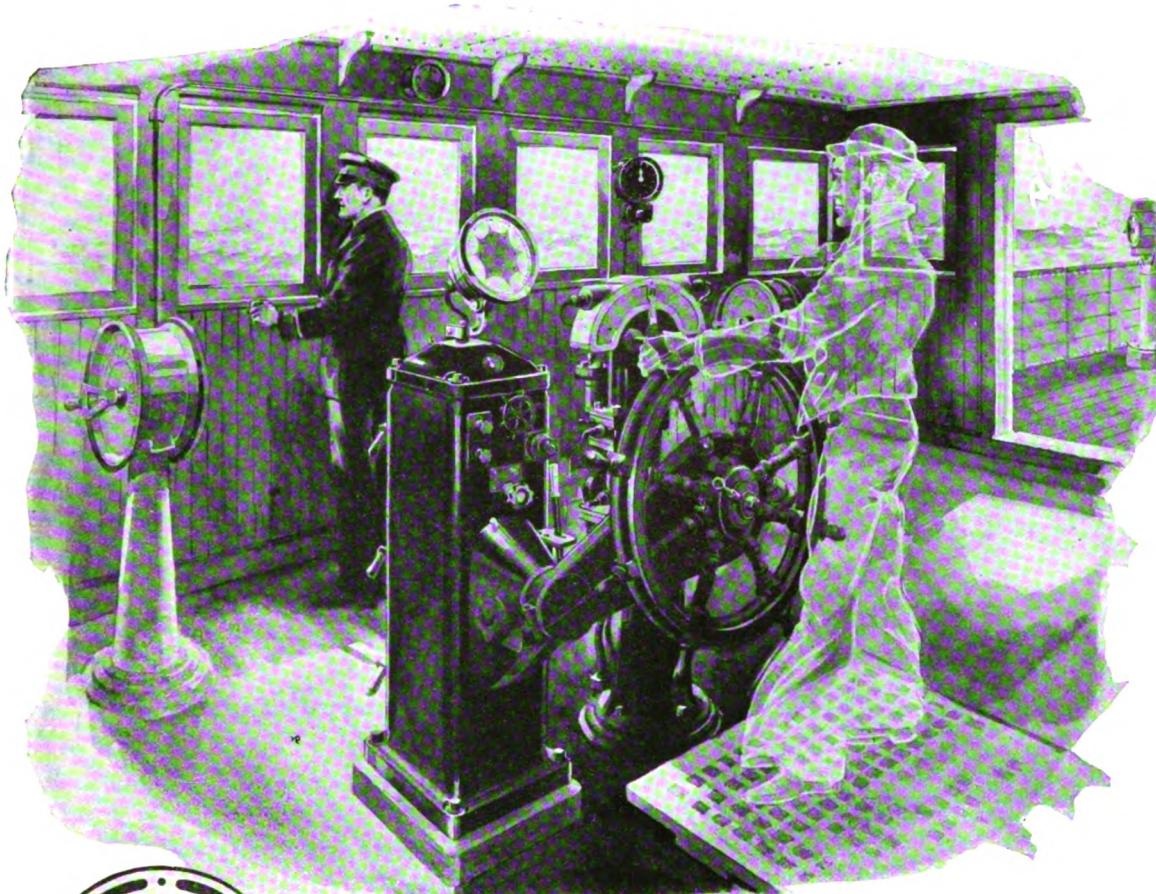
Gyro-Compass—Sperry Gyroscope Co.

Elec. Telegraph—Chas. Cory & Son, Inc.

Bulk freighters for lake service, carrying iron ore, coal, etc. Will operate between Ford plant at River Rouge, Mich., and northern iron ore district. Diesel engine plant is largest ever installed in lakes district, if not the largest single unit ever installed in the United States.



CASH PRIZE CONTEST



Submit a title for this picture

This contest is limited to seagoing personnel (this includes the Great Lakes of North America) of the Navies and Merchant Service of the World and seagoing personnel on land duty.

The Sperry Gyro-Pilot, known as "Metal Mike", is an automatic steering machine—controlled by the Sperry Gyro-Compass—connected to the steering wheel. The Gyro-Pilot steers more accurately than the best of quartermasters; it knows no fatigue; stands all watches; and steers consistently. Over 50 ships are now equipped.

The above picture shows "Metal Mike" in control of the wheel, with a phantom of the traditional quartermaster at the wheel. A title for this scene such as "The Traditional Helmsman Succeeded"; "Science vs. Tradition"; "To-day and Yesterday"; "Tradition Superseded", is desired. (These examples cannot be used.) The title must not exceed seven words or 35 letters—shorter titles will receive more consideration. Only one title per person allowed.

PRIZES—First Prize, \$100.00; Second Prize, \$50.00; Third Prize, \$25.00; next Five Prizes, \$5.00 each.

Should two or more persons submit the title selected as best, second best etc., each will be awarded the full amount of the prize tied for.

The Contest opens June 1st and closes August 31st. Titles postmarked August 31st will be counted as coming within these dates. Title, name, rank, ship, Company and address must be hand printed in legible English.

Address Contribution to THE SPERRYSCOPE, The Sperry Gyroscope Company, Manhattan Bridge Plaza, Brooklyn, N. Y.

Mr. T. H. Rossbottom, General Manager, of the United States Lines, New York; Mr. J. L. Luckenbach, Vice-President, of the Luckenbach Steamship Co., New York; and Captain D. S. Miller, Marine Superintendent of The Cunard Steamship Co., Ltd., New York, have kindly consented to act as judges in this Contest.

Complete information on the Gyro-Pilot sent upon request.

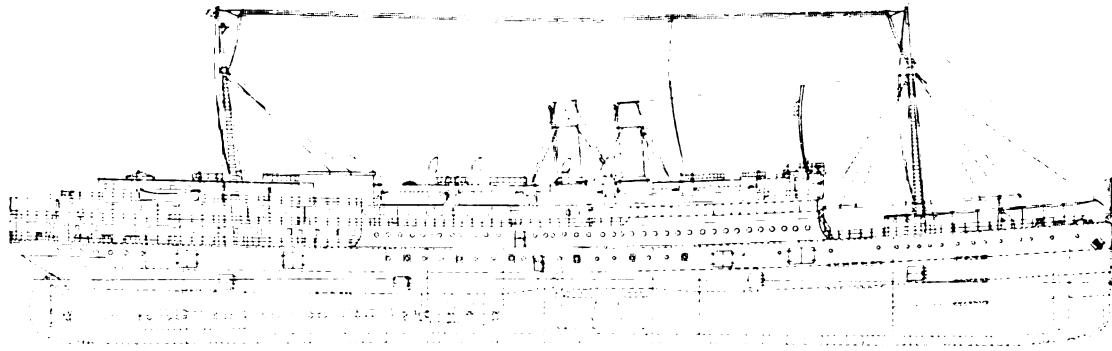
THE SPERRY GYROSCOPE COMPANY

NEW YORK—Manhattan Bridge Plaza, Brooklyn

TOKYO—Mitsui Building

S P E R R Y
FOR BETTER NAVIGATION

Please mention MARINE REVIEW when writing to Advertisers



New York-New Orleans Passenger Liner Bienville

Name of vessel—BIENVILLE.

Owner—Southern Pacific Co., Atlantic Steamship Lines.

Builder—Todd Dry Dock & Construction Co., Tacoma, Wash.

Naval Architect—A. H. Hebble, Superintending Engineer, Southern Pacific Co.

When Launched—Building.

Construction System—Isherwood.

Classification—None—Equal to American Bureau of Shipping.

HULL PARTICULARS

Length overall, 445 feet; length between perpendiculars, 427 feet; breadth molded, 57 feet; depth molded, 37 feet 6 inches; draft loaded, 25 feet 6 inches; passenger capacity, first, 237; third, 111; cargo capacity, tons, 4800; cargo capacity cubic feet, 405,000; bunker fuel capacity in tons, 1200; fuel, oil; speed, 15½ knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, DeLaval Steam Turbine Co.; number 1; type, turbine—double reduction gear; size, 7140 shaft horsepower.

Boilers—Number 6; name of maker, Babcock & Wilcox Co.; type, water tube; size, total heat-

ing surface, 21,576 square feet; superheater, 3668 square feet; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Warren Steam Pump Co.

Windlasses—Hyde Windlass Co.

Winches—Hyde Windlass Co.

Steering Engine—Hyde Windlass Co.

Propellers—Todd Dry Dock & Construction Co.

Refrigerating Machinery—Brunswick-Kroeschell Co.

Oil Burning Equipment—Babcock & Wilcox Co.

Superheaters—Babcock & Wilcox Co.

Electric Generators—B. F. Sturtevant Co.

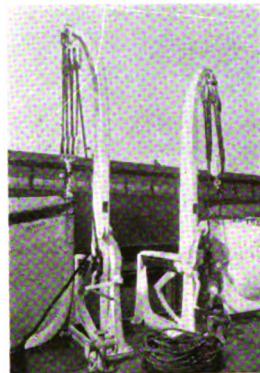
Life Saving Equip.—Welin Boat & Davit Corp.

Radio Apparatus—Radio Corp. of America.

Oil Purifier—De Laval Separator Co.

This vessel will run between New York and New Orleans. She is of the hurricane deck type with straight stem, semi-elliptical stern, and rigged with two pole masts and two smoke stacks. She will have three complete steel decks fore and aft and a steel promenade deck with an orlop deck in addition in the forward hold.

WELIN QUADRANT DAVITS



The best ships, be they passenger vessels, freighters, bulk oil vessels, dredges or barges are WELIN EQUIPPED.

As the shipbuilding industry has developed, so has Welin Life-saving Equipment progressed and clung to its high standard.

The vessels listed here indicate the recognition of QUALITY by Naval Architects, Shipbuilders and Ship Operators.

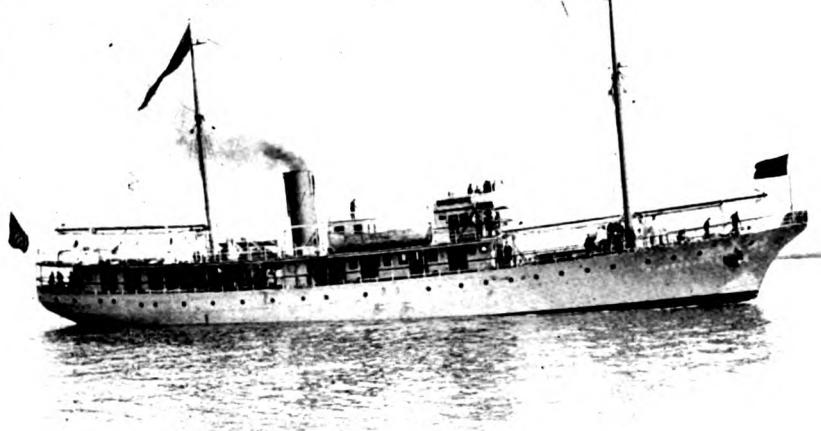
Bienville
George Washington
Robert E. Lee
Berkshire
Allegheny
Troy Socony

City of Birmingham
City of Chattanooga
Steel Vendor
Steel Motor
J. H. Senior
A. Mackenzie

*Welin Life Saving Equipment includes Davits, Winches,
Turning Out Gear, Metallic and Wooden Lifeboats,
Blocks, Life Rafts, Life Floats*

WELIN DAVIT & BOAT CORPORATION
Long Island City, N. Y.

Please mention MARINE REVIEW when writing to Advertisers



**Cable
Supply
Ship
Dickenson**

Name of vessel—DICKENSON.

Owner—Commercial Pacific Cable Co.

Builder—Sun Shipbuilding & Dry Dock Co.

Naval architect—Cox & Stevens.

When launched—Feb. 17, 1923; when completed—April 26, 1923.

Classification—Lloyds.

Service—Two-masted, machinery amidships. Cable supply ship for service between Honolulu and Midway island.

HULL PARTICULARS

Length over all, 189 feet 9 inches; length between perpendiculars, 167 feet 3 inches; breadth molded, 30 feet; depth molded to shelter deck, 22 feet 6 inches; draft, loaded, 15 feet 2½ inches; displacement loaded 1335 tons, salt water; gross tonnage, 831.47; net tonnage, 391; cargo capacity, tons, 150; cargo capacity, cubic feet, 5787; bunker fuel capacity in tons, 180; speed, 11 knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, Vulcan Iron Works; number 1; type, vertical, inverted, triple expansion with cylinders 17 x 25 x 43 inches and 30-inch stroke.

Boilers—180 pounds W. P.; number 2; name of maker, Sun Shipbuilding & Dry Dock Co.; type, Scotch; size, 12 feet in diameter, 11 feet long; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp.

Windlasses—Allan-Cunningham Co., Inc.

Winches—Allan-Cunningham Co., Inc.

Steering Engine—Allan-Cunningham Co., Inc.

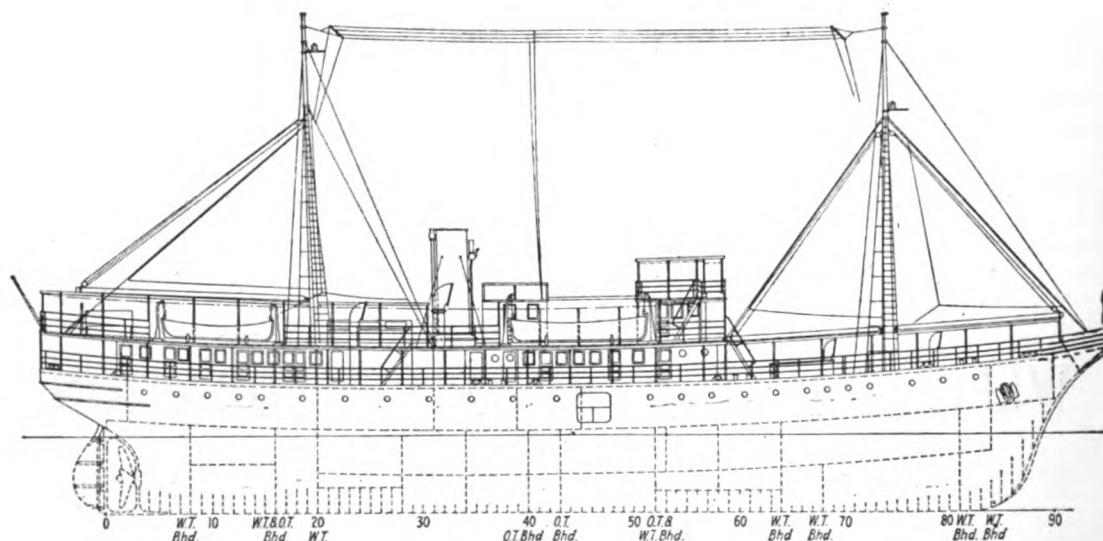
Propellers—Sun Shipbuilding & Dry Dock Co.

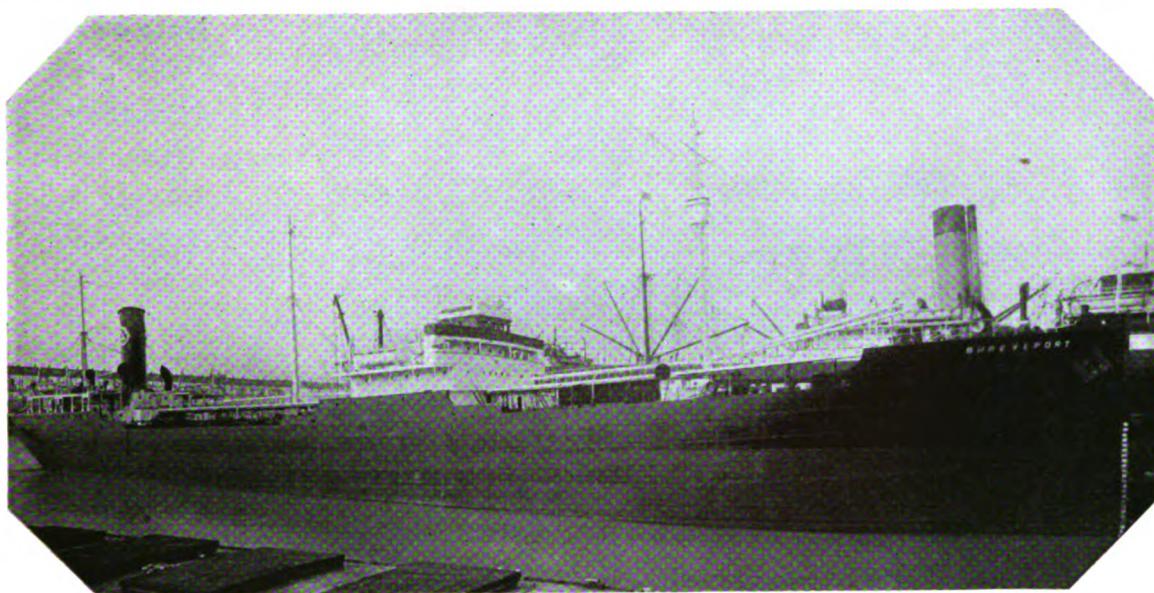
Refrigerating Machinery—York Mfg. Co.

Oil Burning Equipment—Bethlehem Shipbuilding Corp.

Electric Generators—General Electric Co.

Radio Apparatus—Radio Corp. of America.





Oil Tanker S.S. Shreveport Equipped with "Burnwell" Oil System, Natural Draft

*This Installation replacing Forced Draft System
has created an 11% Fuel Saving*

John S. Patten Engineering Co., Inc.

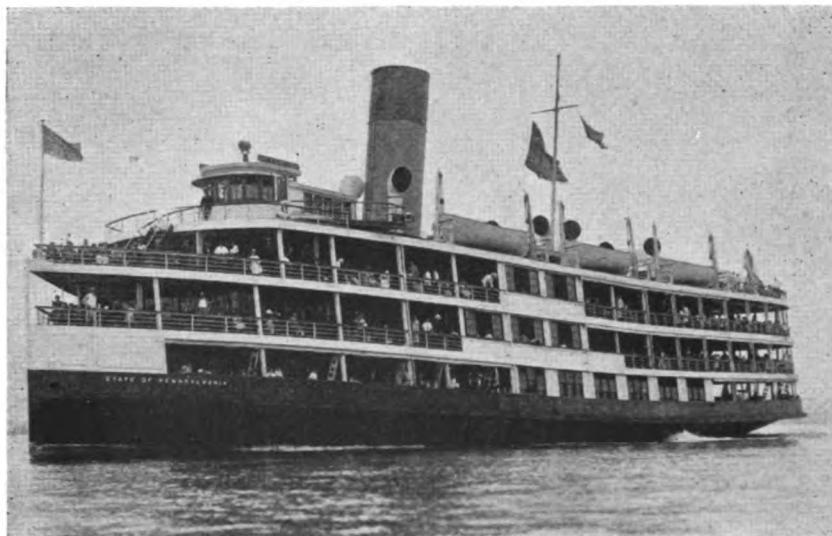
Combustion and Marine Engineers

10 Hanover Street, New York City

Representation and Service:

Boston	Boston Eng. Co., 308 Atlantic Ave.
Philadelphia	Globe Eng. Co., 723 N. 24 St.
Baltimore	Proctor Eng. Co., 502 E. Lombard St.
Norfolk	Same as Baltimore.
New Orleans . .	Gulf Engineering Service & Specialty Co., 524 Poydras St.

Please mention MARINE REVIEW when writing to Advertisers



**Delaware
River Day
Steamer
State of
Pennsylvania**

Name of Vessel—STATE OF DELAWARE, sister ship
STATE OF PENNSYLVANIA

Owner—Wilson Line, Wilmington, Del.

Builder—Pusey & Jones Co., Wilmington, Del.

Naval Architect—George G. Sharp, New York.

When Launched—April 3, 1923; when completed
—June 7, 1923.

Classification—American Bureau of Shipping.

HULL PARTICULARS

HULL PARTICULARS
Length overall, 225 feet; length between perpendiculars, 219 feet; breadth molded, 48 feet 9 inches; depth molded, 13 feet 9 inches; beam over guards, 58 feet, 9 inches; draft loaded, 9 feet 6 inches; passenger capacity, 3500; bunker fuel capacity in tons, 40; speed, 18 miles per hour.

MACHINERY PARTICULARS

MACHINERY PARTICULARS
Main Engine—Name of builder, Pusey & Jones Co.; number one; type, four-cylinder, triple expansion, direct acting, surface condensing; size, 24 x 37 $\frac{3}{4}$ x 44 x 44-inches and 30-inch stroke, 2700

indicated horsepower at 155 r. p. m.

Boilers—Number 2; name of maker, Babcock & Wilcox Co.; type, water tube; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Warren Steam Pump Co.

Windlasses—American Engineering Co.

Steering Engine—American Engineering Co.

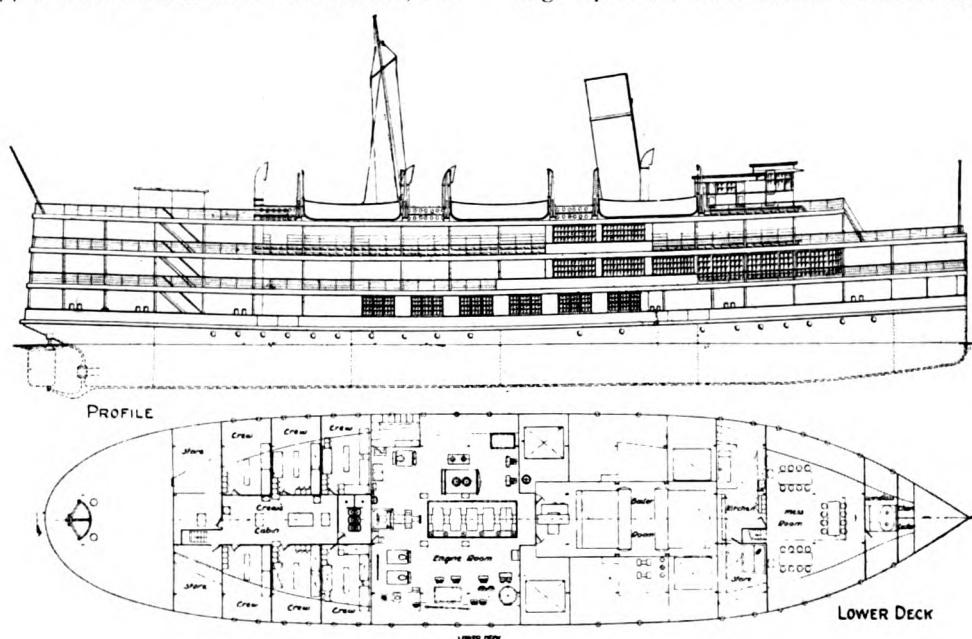
**Steering Engine—American En
Propellers—Pusey & Jones Co.**

Propellers—Fussey & Jones Co.
Refrigerating Machinery—Remington

Refrigerating Machinery—Remington.
Oil Burning Equipment—Coen Co. and Babcock & Wilcox Co.

Electric Generators—General Electric Co.

Electric Generators—General Electric Co.
Operated in the Philadelphia-Riverview Beach service of the Wilson Line, on the Delaware river. They have five decks, four used for passenger accommodation. Crew's quarters and storerooms on lower deck; ladies' cabin, smoking room, lavatories, and large refreshment booth on main deck; large open air ballroom on saloon deck.





**Electric
Driven
Fuel Ship
Standard
Service**

Name of Vessel—STANDARD SERVICE
Owner—Standard Oil Co. of California.
Builder—Bethlehem Shipbuilding Corp., Ltd.
When Launched—Jan. 23, 1923; when completed
—March 29, 1923.
Classification—None.

HULL PARTICULARS

Length overall, 218 feet 6 inches; length between perpendiculars, 210 feet; breadth molded, 40 feet; depth molded, 16 feet 6 inches; draft loaded, 15 feet 2 inches; displacement loaded, 2802 tons; gross tonnage, 1271; net tonnage, 765; cargo capacity, tons, 1900; cargo capacity, cubic feet, 72,431; bunker fuel capacity in tons, 81; speed, 9 knots.

MACHINERY PARTICULARS

Oil Engine Main Drive—Number, 2 main engine generating sets and one 600 shaft horsepower

electric motor; size, 400 brake horsepower each; make, Pacific Werkspoor Type (Pacific Diesel Engine Co.).

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Dow Pump & Diesel Engine Co., Krogh Pump Mfg. Co., Alberger Pump & Condenser Co.

Windlasses—Allan-Cunningham Co.

Winches—Allan-Cunningham Co.

Steering Engine—Allan-Cunningham Co.

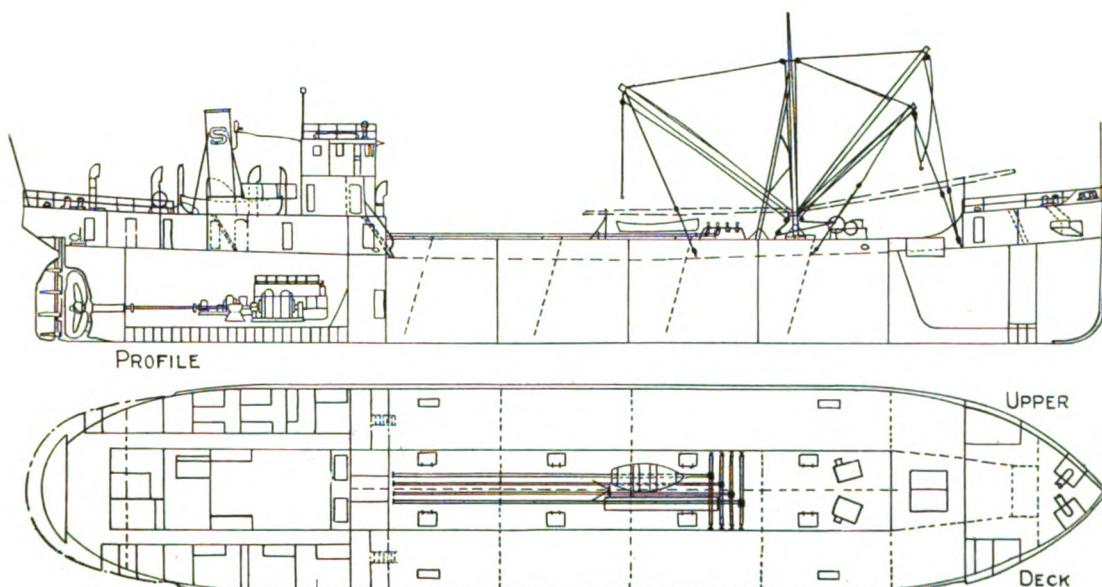
Propellers—Bethlehem Shipbuilding Corp., Ltd.

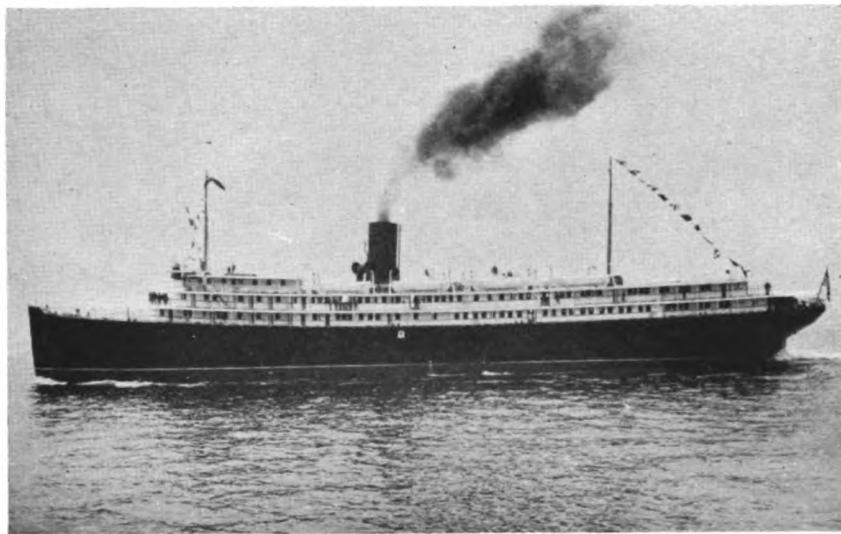
Electric Generators—Westinghouse Electric & Mfg. Co. (gas engine driven)

Davits—Welin Boat & Davit Corp.

Radio Apparatus—Radio Corp. of America.

For inland water service, distributing fuel to ships along water front.





**Coastwise
Passenger
Liner
Berkshire**

Name of vessel—BERKSHIRE.

Owner—Merchants' and Miners' Transportation Co., Baltimore.

Builder—Federal Shipbuilding Co., Kearny, N. J. Isherwood System.

Naval Architect—J. M. Ferguson, Merchants' and Miners' Transportation Co.

When Launched—March 17, 1923; when completed—May, 1923.

Classification—A. I. E. American Bureau of Shipping.

HULL PARTICULARS

Length overall, 368 feet; length between perpendiculars, 350 feet; breadth molded, 52 feet; depth molded to hurricane deck, 35 feet; draft loaded, 19 feet; displacement loaded, 6950 in tons of 100 cubic feet; gross register tonnage, 5486; net register tonnage, 3261; passenger capacity, 205 first, 24 second class; cargo capacity, cubic feet, 307,319 bale capacity; bunker fuel capacity in tons, 574; speed, 12 knots.

MACHINERY PARTICULARS

Main Engine—One reciprocating; name of builder, Hooven, Owens, Rentschler Co., Hamilton, O.; number 1; type, reciprocating; 4-cylinder; size, 24½ x 41½ x 54 x 54 and

48 inches stroke; indicated horsepower, 2700 at 81 revolutions per minute.

Boilers—Number 4; name of maker, Federal Shipbuilding Co.; type, Scotch, single ended; size, 14 feet 3 inches diameter, 11 feet 2¼ inches long; fuel, oil; 200 pounds per square inch working pressure; so designed that conversion to burn coal can readily be made if advisable; 12 Diamond Power soot blowers.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Warren Steam Pump Co.

Windlasses—Hyde Windlass Co.

Winches—10, Lidgerwood Mfg. Co.

Steering Engine—Hyde Windlass Co.

Propellers—Federal Shipbuilding Co.

Refrigerating Machinery—One 2-ton, Brunswick-Kroeschell Co.

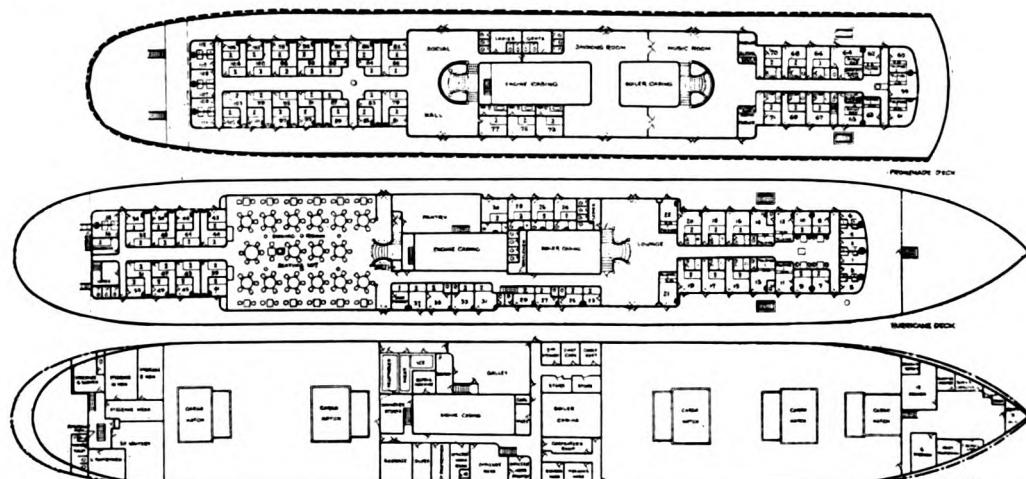
Oil Burning Equipment—Todd System.

Electric Generators—General Electric Co.

Life Saving Equip.—Welin Boat & Davit Corp.

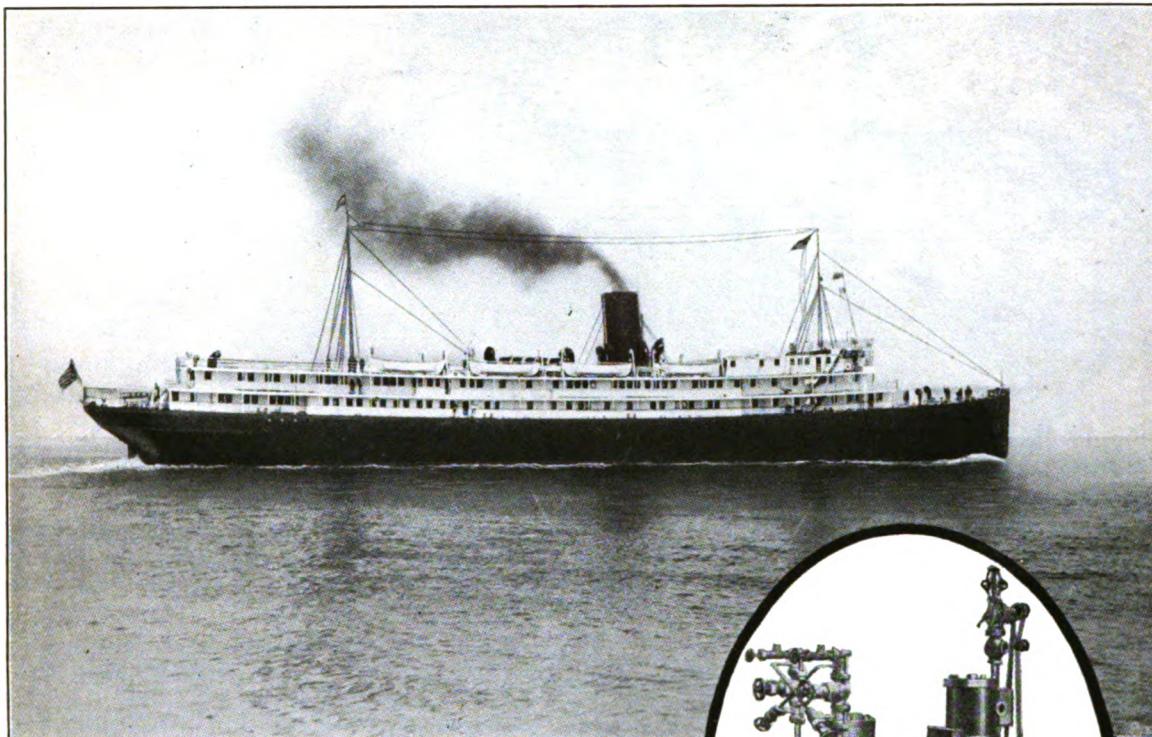
Radio Apparatus—Radio Corp. of America.

The BERKSHIRE and her sister vessel, the ALLEGHENY, are combination cargo and passenger ships, especially designed for the coastwise service.



BRUNSWICK-KROESCHELL

Marine Refrigerating Machinery



S/S "Allegheny"

Of the thirty-two vessels described in this section, the eighteen listed below are equipped with Brunswick plants. This preponderance is typical of the preference continuously shown throughout the marine trade for Brunswick equipment—a preference which shows increase rather than abatement and gathers weight when one reflects that today there are over 2,200 Brunswick machines aboard ship.

Equipped with Brunswick plants, "The Standard for all marine installations:

S/S Carabobo

S/S Eurana

S/S Alaska

S/S City of Chattanooga

S/S City of Birmingham

S/S Birkshire

S/S Allegheny

S/S Haleakala

M/S Steelvendor

S/S George Washington

S/S Robert E. Lee

S/S Bienville

S/S Chilore

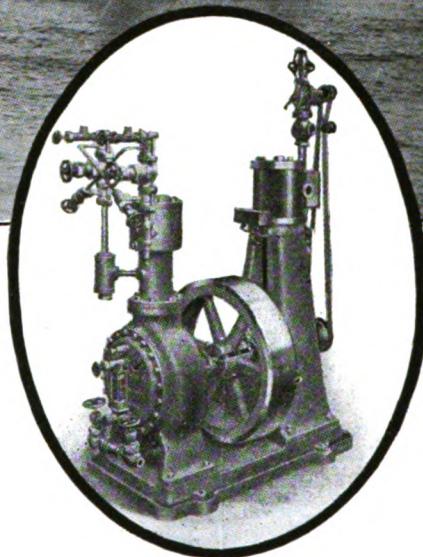
S/S Miller County

M/S Bidwell County

M/S Challenger

M/S J. H. Senior

M/S Steelmotor



We invite your careful investigation.

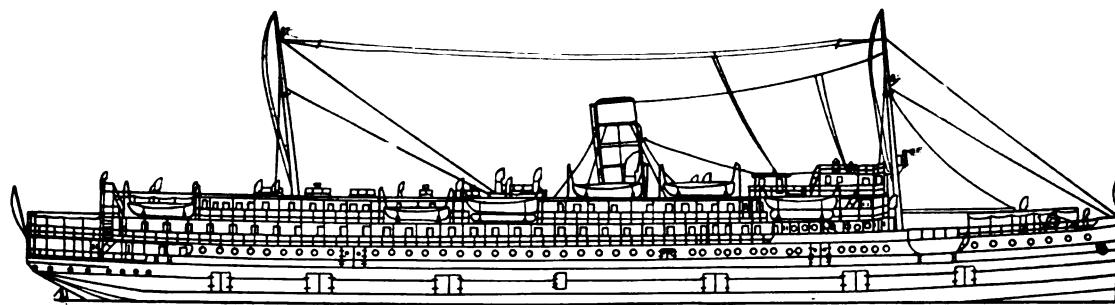
Brunswick-Kroeschell Company

Chicago, Ill.
4207-B Diversey Ave.

Refrigerating & Ice Making Machines
Power & Heating Boilers

New Brunswick, N. J.
288 Jersey Ave.

Please mention MARINE REVIEW when writing to Advertisers



New York-Norfolk Passenger Liner George Washington

Name of Vessel—GEORGE WASHINGTON, sister ship ROBERT E. LEE

Owner—Old Dominion Steamship Co.

Builder—Newport News Shipbuilding & Drydock Co.

Naval Architect—Theodore E. Ferris, New York.

Completion Expected—GEORGE WASHINGTON, about Dec. 1924, ROBERT E. LEE, about Feb., 1925.

Classification—American Bureau of Shipping, Class A-IE, with freeboard.

HULL PARTICULARS

Length overall, 389 feet 9 inches; length between perpendiculars, 375 feet, 6 inches; breadth molded, 53 feet 9 inches; depth molded to hurricane deck, 29 feet 9 inches; draft loaded, 17 feet 9 inches; displacement loaded, 6430 tons; gross tonnage about 5000; net tonnage, about 3700; passenger capacity, 322 white and colored; steerage, 58 white and colored; immigrants, 282; cargo, capacity tons, 1700; cargo, capacity cubic feet, 249,300 bales; bunker fuel capacity in tons, 365; speed, 16 knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, Newport News Shipbuilding & Drydock Co.; number 1; type, Curtis-Brown turbine, single reduction gear; size, 4750 shaft horsepower.

Boilers—Number 4; name of maker, Babcock & Wilcox Co.; type, water tube; size, total water heating surface about 16,628 square feet; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp.

Windlasses—American Engineering Co.

Winches—Lidgerwood Mfg. Co. (2 only), 10 cargo elevators, electric.

Steering Engine—American Engineering Co.

Propellers—Newport News Shipbuilding & Drydock Co.

Refrigerating Machinery—Brunswick-Kroeschell Co.

Oil Burning Equipment—Babcock & Wilcox Co.

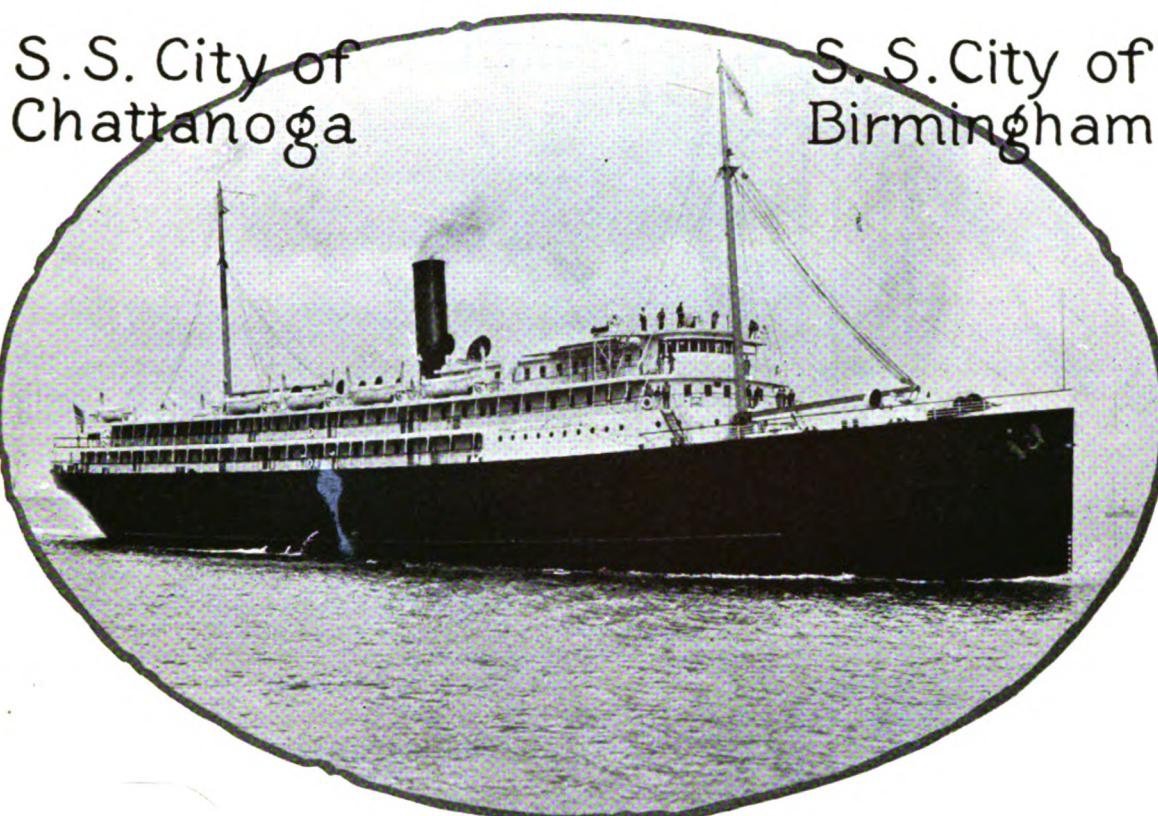
Superheaters—Babcock & Wilcox Co.

Electric Generators—Westinghouse Electric & Mfg. Co.

Life Saving Equipment—Welin Boat & Davit Corp.

Radio Apparatus—Radio Corp. of America.

Passenger and freight ships for night service between New York and Norfolk, Va. Of 3-deck hurricane deck coastwise type, with forecastle, deck well, bridge enclosure, and continuous deck erections aft; single screw, complete double bottom; having lower, main, hurricane, promenade and boat decks with shade deck amidships. There will be 10 hatch openings with electric freight elevators through main and lower decks. Public spaces: Smoking room, deck veranda, tea room, beverage room, lounge and music room, writing room, sun parlor, saloon lobbies. Separate public spaces and dining room are provided for first class colored passengers.



Another Fine Example of "Newport News" Craftsmanship

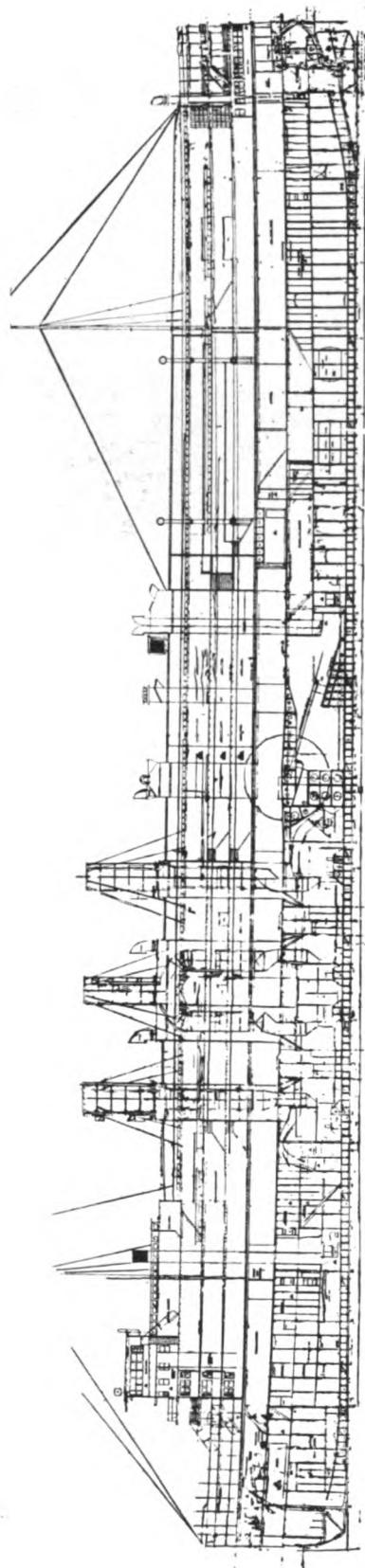
The passenger accommodation represents a big stride forward in ship construction. In fact, every feature is proof of our supreme effort to present the best in traveling facilities that anyone could desire.

The cargo handling facilities follow the latest and most up-to-date marine practice. One of the unusual features is the increase of height of the side ports, to allow automobiles of the limousine or other standing top type to pass through safely and expeditiously.

If you desire fine ships, or are in need of quick, high grade repair service, you can make satisfaction doubly sure by calling on us. Our engineers will gladly consult with you, without cost or obligation.

Newport News Shipbuilding and Dry Dock Co.
Newport News, Va.

Please mention MARINE REVIEW when writing to Advertisers



Great Lakes SideWheel Passenger Liner Greater Detroit

Name of Vessel—GREATER DETROIT, sister ship GREATER BUFFALO.

Owner—Detroit & Cleveland Navigation Co.

Builder—American Shipbuilding Co.

Naval Architect—Frank E. Kirby.

When Launched—GREATER DETROIT Sept. 15, 1923; GREATER BUFFALO Oct. 27, 1923.

Classification—American Bureau of Shipping.
*100.

HULL PARTICULARS

Length overall, 535 feet; length between perpendiculars, 519 feet; breadth molded, 58 feet hull, 96 feet 6 inches over guards; depth molded, 23 feet 7 inches, 22 feet 10 inches at guard; draft loaded, 15 feet 6 inches; displacement loaded, 9315 net tons; gross tonnage, 7739.99; net tonnage, 3330; passenger capacity, first 1194; cargo capacity, 1200 tons (short); bunker fuel capacity, 582.35 tons (at 40 cubic feet); speed, 21 miles maximum.

MACHINERY PARTICULARS

Main Engine—Name of builder, American Shipbuilding Co.; number one; type, inclined, 3-cylinder compound; size, 66 x 96 x 96 and 108-inch stroke.

Boilers—Number 3 double ended, 6 single ended; name of maker, American Shipbuilding Co.; type, Scotch; size, double ended 14 feet 2 7/16 inches mean diameter, and 20 feet 6 inches long, single ended 14 feet outside diameter and 10 feet 6 inches long; fuel, coal.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—American Shipbuilding Co., Warren Steam Pump Co., Morris Machine Works, Dean Bros. Steam Pump Co., Union Steam Pump Co.

Windlasses—American Shipbuilding Co.

Winches—American Shipbuilding Co.

Steering Engine—American Shipbuilding Co.

Paddle Wheels—American Shipbuilding Co.

Refrigerating Machinery—Brunswick-Kroeschell Co., with Prosser steam engine from Chandler-Taylor Co., Indianapolis.

Superheaters—Power Specialty Co.

Electric Generators—Terry turbine, Allis-Chalmers generator.

Forced Draft—American Blower Co.

Gyro-Compass—Sperry Gyroscope Co.

Radio Apparatus—Radio Corp. of America.

MARINE REVIEW

N & S C C

Lykes Bros. Steamship Co., Inc.
Lykes Line
GALVESTON TEXAS
April 10th, 1924

**National Malleable & Steel Castings Co.,
Cleveland, Ohio.**

Dear Sirs:-

We have received your letter of April 3rd regarding your Naco anchor chain which has been supplied to a number of vessels operated by this firm, and wish to advise that we have found it to be highly satisfactory in every way - it being, in our opinion, far superior to the old stud link chain, on which we have had, in a great many instances, to spend quite a sum for repairs replacing lost studs in links.

We have never had a case where Naco chain has parted under any strain put upon it, and we have had some very severe tests. We, therefore, feel that we cannot praise Naco too highly, as it seems to be the finest product of this nature on the market.

You're very truly,

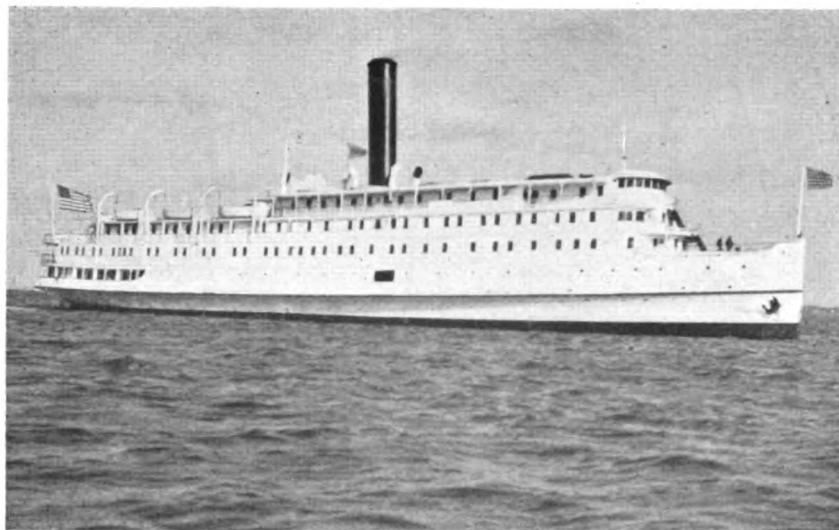
LSP:J
cc-New Orleans

Manager, Operating Department

Write for the Naco Booklet telling why Naco Chain is
GREATEST IN STRENGTH
MOST UNIFORM IN SIZE
and
LOWEST IN COST OF OPERATION

NATIONAL MALLEABLE AND STEEL CASTINGS CO.
Successor To
THE NATIONAL MALLEABLE CASTINGS COMPANY
General Office — Cleveland, O.

Please mention MARINE REVIEW when writing to Advertisers



**Chesapeake
Bay Liner
State of
Virginia**

Name of Vessel—Steamer STATE OF VIRGINIA, sister ship STATE OF MARYLAND

Owner—Baltimore Steam Packet Co., (Old Bay Line).

Builder—Pusey & Jones Co., Wilmington, Del.

Naval Architect—A. M. Main.

When Launched—Sept. 6, 1922; when completed Feb. 12, 1923.

Classification—American Bureau of Shipping A-1.

HULL PARTICULARS

Length overall, 330 feet; length between perpendiculars 320 feet; breadth molded, 56 feet 6 inches; breadth overall, 58 feet; depth molded, 18 feet 6 inches; draft loaded, 14 feet 6 inches; mean displacement loaded, 2,975 tons salt water; gross tonnage, 1783; net tonnage, 674; passenger capacity, 573 first, 21 second; cargo capacity, tons, 540; cargo capacity, cubic feet, 84,910; bunker fuel capacity in tons, 70; speed, 18.5 miles.

MACHINERY PARTICULARS

Main Engine—Name of builder, Pusey & Jones Co.; number one; type, triple expansion, 4-cyl-

inder; size, 24½ x 40 x 47 x 47 and 42 inch stroke.

Boilers—Number 4; name of maker, Sun Shipbuilding & Dry Dock Co.; type, Scotch; size, 13 feet 3 inches diameter and 11 feet 6 inches long; fuel, coal.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Warren Steam Pump Co., main feed, air, bilge, fire and sanitary pumps, circulating pump; Pusey & Jones, fan pump, connected to Engberg engine.

Windlass—American Engineering Co.

Winches—American Engineering Co.

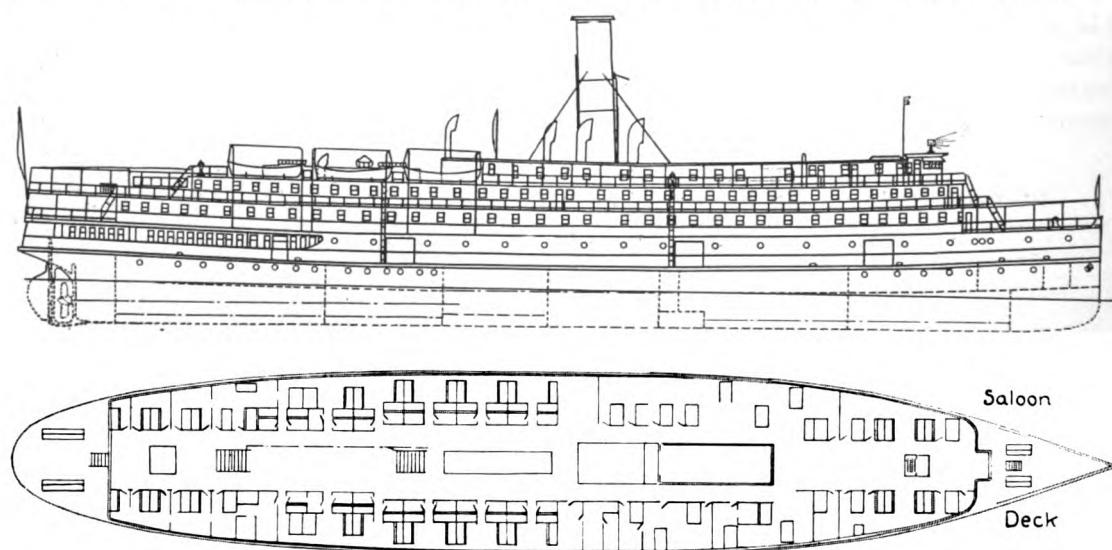
Steering Engine—American Engineering Co.

Propellers—Pusey & Jones Co., (built-up type).

Refrigerating Machinery—Remington Machine Co., Wilmington, Del.

Electric Generators—Engberg's Electric & Mechanical Works, St. Joseph, Mich.

Vessels were built for passenger and freight service between Baltimore and Norfolk, Va. The sistership STATE OF MARYLAND is an exact duplicate, built at the same time for the same owner.





**Coastwise
Freight
Carrier
Wilton**

Name of Vessel—WILTON, sister ship CORNISH

Owner—Eastern Steamship Lines Inc.

Builder—Bethlehem Shipbuilding Corp., Sparrows Pt., Md.

Naval Architect—Theodore E. Ferris, New York.

When Launched—CORNISH, Feb. 10, 1923; WILTON, Dec. 16, 1922; when completed, CORNISH, March 13, 1923; WILTON, Feb. 3, 1923.

Classification—Freight.

HULL PARTICULARS

Length overall, 245 feet; length between perpendiculars, 233 feet 6 inches; breadth molded, 40 feet; depth molded to shelter deck, 26 feet 6 inches; draft loaded, 15 feet 6 inches; displacement loaded, 2760 tons; gross tonnage, 1827; net tonnage, 1,094; cargo capacity, tons, 1,000; cargo capacity, cubic feet, 121,380 bales; bunker fuel capacity in tons, 278.2; deadweight tonnage, 1340; speed, 12 knots.

MACHINERY PARTICULARS

Main Engine—Name of builder, Hooven, Owens, Rentschler Co., Hamilton, O.; number 1; type, reciprocating triple expansion; size, 19 x 32 x 56 and 36-inch stroke.

Boilers—Number 2; name of maker, Bethlehem Shipbuilding Corp.; type, S. E. Scotch; size, 13 feet 9 inches dia. and 11 feet over heads; fuel, oil.

AUXILIARY EQUIPMENT

Manufacturers of:

Pumps—Worthington Pump & Machinery Corp.

Windlasses—Hyde Windlass Co.

Winches—Hyde Windlass Co.

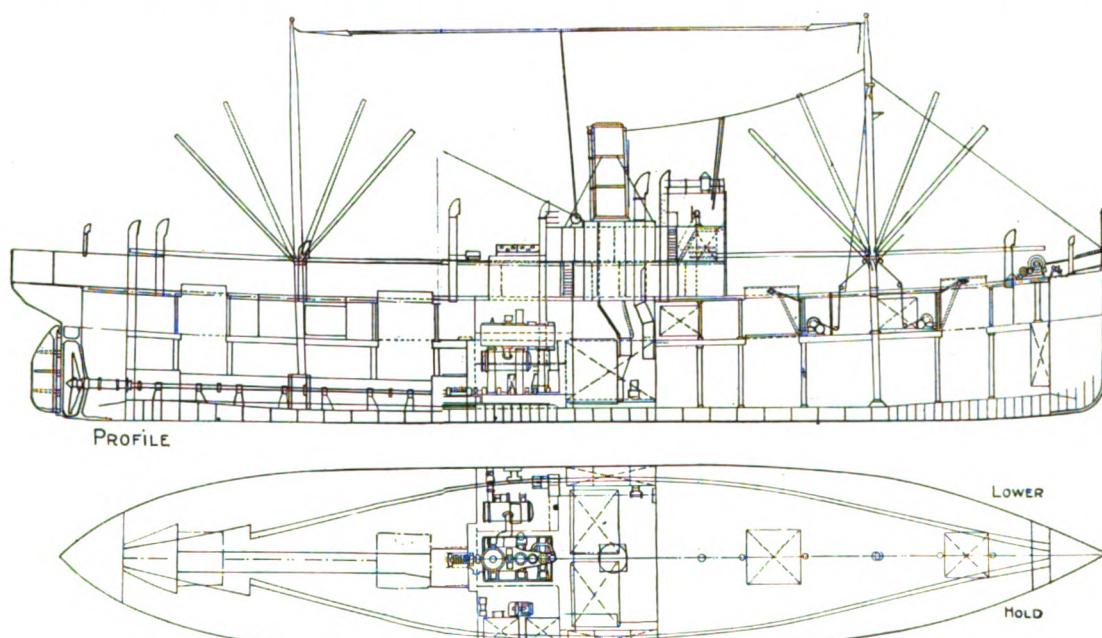
Steering Engine—Hyde Windlass Co.

Refrigerating Mach.—Remington Machine Co.

Oil Burning Equip.—Bethlehem (Dahl System)

Electric Generators—One 10-K. W. Engberg.

For freight service between New York, Boston and Portland, Me. Two-deck shelter deck type.





New York
Harbor Ferry
Rodman
Wanamaker

Name of Vessel—RODMAN WANAMAKER, sister ships W. R. HEARST and GEORGE W. LOFT

Owner—Department of Plant and Structures, New York City, Grover A. Whalen, commissioner.

Builder—Staten Island Shipbuilding Co.

Naval Architect—Martin G. Kindlund.

Electrical Engineers—C. T. Perry and C. L. Turner, Prof. Morton Arendt (consulting engineer) under general supervision of Calvin Crocker, chief engineer of ferries.

When Completed—Nov., 1923.

Classification—American Bureau of Shipping scantlings, hull and machinery tests and inspection. No classification.

HULL PARTICULARS

Length overall, 221 feet; length over end posts, 215 feet; breadth molded, 45 feet; breadth over guards, 64 feet; depth molded, 18 feet 1 inch amidships; draft loaded 12 feet; displacement loaded, 1400 tons; gross tonnage, 875; net tonnage, 595; passenger capacity, 1200-1500 first; vehicle capacity, 40-50; bunker fuel capacity in tons, 70; speed on trial, 16 miles (statute), service speed, 14 miles.

MACHINERY PARTICULARS

Main turbo generator—1800 kilowatt, 3200 revolutions per minute; main engine, 2300 volts, alternating current; name of builder, General

Electric Co.; number 1; propelling motors (2), induction type alternating current; size, total shaft horsepower, 2200.

Boilers—Number 4; name of maker, Heine Boiler Co.; type, water tube; size, 2000 square feet heating surface each; fuel, buckwheat coal; pressure, 250 pounds; superheat, 200 degrees; forced draft, turbo blowers; 36 Diamond Power Specialty Corp. soot blowers.

AUXILIARY EQUIPMENT

Manufacturers of:

Condenser—C. H. Wheeler Mfg. Co., 4000 square feet surface, 28.5-inch vacuum.

Pumps—C. H. Wheeler Mfg. Co., Worthington Pump & Machinery Corp., M. T. Davidson Co.

Steering Engines—Electric drum type, American Engineering Co., Cutler-Hammer control, Electro Dynamic Co. motor.

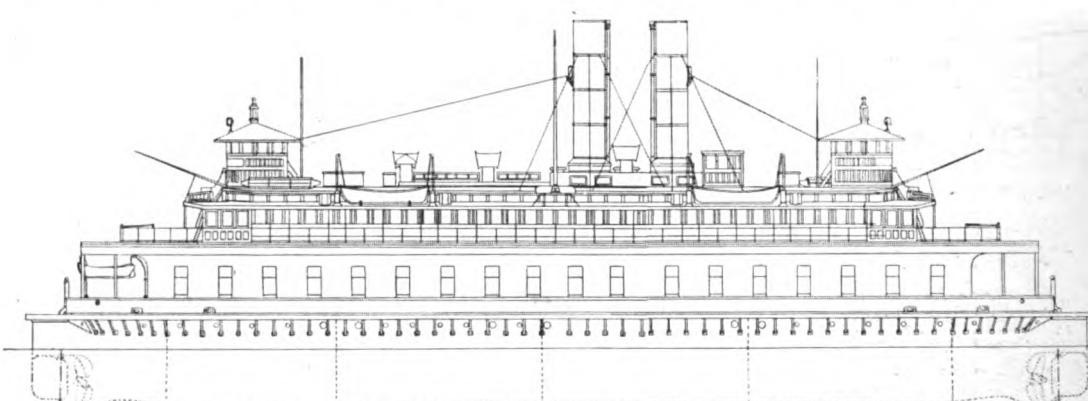
Propellers—Staten Island Shipbuilding Co.

Superheaters—The Superheater Co.

Electric Generators—General Electric Co., two 125 kilowatt direct current turbo-driven.

Oil Purifier—De Laval Separator Co.

For ferry service between Manhattan, Staten Island and Brooklyn, to carry vehicles on main deck and passengers on upper deck. Steel hull, deck and house sides. Isherwood system of hull construction, including main deck. Fireproof.



Want Title for New Marine Picture

Seagoing personnel of the navies and merchant service of the world are being asked by the Sperry Gyroscope Co., Brooklyn, N. Y., to suggest a title for a nautical picture. This shows a vessel at sea being steered by an automatic steering device, the deck officer forward in the pilot house on lookout and a phantom of the traditional quartermaster standing at the wheel. This steering device has been installed in the past few years on a large number of ships.

Announcements by the company cover the rules they have drawn up for those submitting titles, the rewards it will give, and the dates during which suggested titles will be received. T. H. Rossbottom, general manager of the United States Lines, J. L. Luckenbach, vice president of the Luckenbach Steamship Co. and Capt. D. S. Miller, marine superintendent of the Cunard Steamship Co., all of New York, will judge the merits of the suggested titles submitted.

Heads Detroit Office

C. O. BERGLUND has been made general agent at the Detroit office of the Great Lakes Transit Corp., being promoted from the Houghton-Hancock, Mich., office. His first contact with lake shipping was in 1903 at Duluth, as purser of the C. W. Moore of the Booth line. In 1904 he was purser of the EASTON of the White Line Trans-

MARINE REVIEW

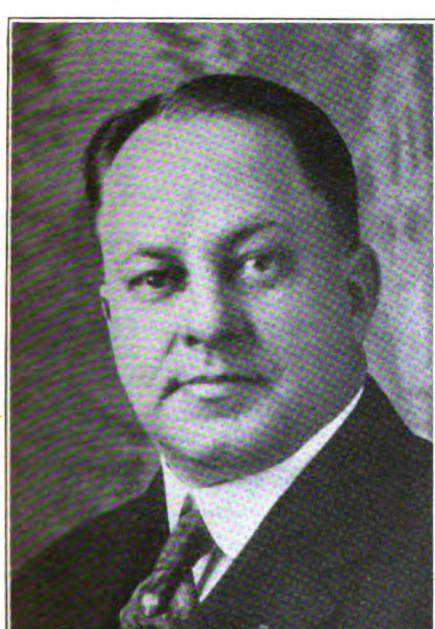
portation Co. operating on Lake Superior. He joined the Anchor line in 1905 as purser of the JAPAN and was made agent of the line at Sault Ste. Marie, Mich., in 1907, being promoted in 1909 to joint representative at Houghton, Mich., of the Erie & Western Transportation Co. (Anchor line) and the Western Transit Co. Beginning in 1912 he represented the Anchor line alone until 1916 when the Great Lakes Transit Corp. was

Gives Data on Lake Vessels and Officers

MORE than 1000 vessels operating on the Great Lakes and the St. Lawrence river west of Montreal, are listed in the new 1924 edition of the Great Lakes Red Book. The name of both the owning and operating companies, their addresses, the names of the captain and chief engineer of each vessel, and the capacity of the bulk freighters, also are given in this convenient vest-pocket size directory.

Publication for 22 years has proved the value of this directory and the importance of its information to those carrying on business with lake companies and vessels. Its information is thoroughly accurate and up-to-date, since the vessel companies are the sources for the data.

The Red Book is published by Marine Review, Penton building, Cleveland, and retails for \$1.



C. O. BERGLUND
Newly appointed general agent at Detroit of the Great Lakes Transit Corp.

formed by a merger of the railroad owned lake lines, including the Anchor Line, Western Transit Co., Mutual Transit Co., Erie Railroad Steamship Line, and Lehigh Valley Line. His new post comes as recognition of his work for the consolidated company.

LOUIS J. BROSMAN, Buffalo, succeeds Mr. Berglund as Houghton-Hancock agent of the Great Lakes Transit Corp. He joined that company when it was organized, first as assistant chief clerk and then chief clerk.

Reports from Yokohama state that considerable congestion exists at that port. General conditions of the harbor have been restored 70 per cent since the earthquake. Part of the berthing jetty has been rebuilt and lighterage facilities have been increased. Notwithstanding, vessels arriving with cargo are reported to be encountering delay in discharging. Conditions with reference to protection for goods are said to be alarming.



NEW STYLE OF ANCHOR CHAIN SHACKLE

Designs New Shackle

The National Malleable & Steel Castings Co., Cleveland, for several years has been experimenting on chain shackles, in order to bring this equipment to the strength of chain. The illustration shows a new design of shackle developed by the company as a result of this experimental work. Some of these shackles have been placed in service both on the oceans and the Great Lakes.

The principal changes made from older style types, are to reduce the width between the shackle jaws, bevel off the ends, use a larger locking pin and a different style of shackle pin. The advantages sought are greater strength through the reduction in width of the shackle which reduces the bending moment; better fitting which gives improved operation over wildcat; less chance of catching in hawse pipe and greater certainty in having the shackle in the proper position for operation. The design is said to prevent the shackle from getting crosswise with the chain and anchor.

The Bethlehem Shipbuilding Corp., Ltd. Bethlehem, Pa., has received an order for a complete set of its fuel oil burning apparatus to be installed on the Red "D" Line steamship MARACAIBO which was reconditioned in May at the plant of the Staten Island Shipbuilding Co.

At a recent auction sale at Boston, R. J. Murray was high bidder at \$5600 for the steamer YANKTON.

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME	DATE	NATURE	PLACE	DAMAGE RESULTING
Anna C. Wilson Agawan	Apr. 2	Rolled over	Manistee	Floated	Goole Trader	Apr. 5	Collision	Hull	Bows dam.
	Apr. 8	Fire	Long Island Sound	Slight dam.	Grange	Apr. 3	Disabled	South Ship Head	Broke down
Astrea	Apr. 2	Touched ob- struction	At sea	Prop. dam.	Grelstone	Apr. 8	Collision	Aastrueel Rds.	Serious dam.
Ada A Aledo	Apr. 10	Fire	Brooklyn	Not stated	Glenbuckie	Apr. 21	Ashore	Vidal Shoal	Tank leak.
	Apr. 16	Disabled	Ardrosian	Crank shaft def.	Glencove	May 2	Struck bridge	Cornwall canal	To frames
Arator	Apr. 15	Disabled	Seattle	Leaking	Glenaston	May 2	Grounded	Weavers Pt.	Not stated
Alabama Maru	Apr. 18	Struck Island	Barren Island	Stem dam.	Hughes Bros.	Apr. 7	Struck ledge	New London	Not stated
Anchor Light	Apr. 16	Fire	East River	Slight dam.	Harford	Apr. 8	Ashore	Governors Island	Floated
Attualita	Mar. 24	Fire	Genoa	Slight dam.	H. M. Storey	Apr. 13	Collision	New York	To frames
Apurimac	Apr. 2	Disabled	Liverpool	Mchy. def.	Hurunui	Apr. 15	Fire	New York	No dam.
Airdale	Apr. 20	Ice	At sea	To bow & plates	Hampton Roads	Apr. 16	Not under control	off Highlands	Proceeded
Albert Meyer	Apr. 25	Aground	Sagua la Grande	Jettis. cargo	Hans Maersk	Apr. 19	Collision	off Sandy Hook	Cons. dam.
Albergallus	Apr. 2	Collision	Galatz	Slight dam.	H. T. Harper	Apr. 25	Disabled	nr. San Francisco	Mchy. trble.
Admiral Peary	Apr. 8	Disabled	Taylor Bay	Lost blades & prop.	Hercules	Apr. 1	Collision	Barry	To port side
Ansaldo San Giorgio II	Apr. 7	Collision	Marsailles	Not stated	Hanover	Mar. 31	Struck obstr.	At sea	To props.
Avocet	Apr. 7	Collision	River Scheldt	Stern dam.	Hans	Apr. 7	Collision	Oporto	Not stated
A. H. C.	Apr. 17	Disabled	Portland	Pipes, eng.	Hellen	Apr. 10	Collision	Aberdeen	Undam.
Bayern	Apr. 1	Collision	Aberdeen Channel	Not ser.	Hollandia	Apr. 11	Collision	off Rotherhithe	Unknown
Bintang	Apr. 1	Grounded	Breakers Point	Leak. slight.	Hydro	Apr. 17	Ashore	Chicago	Jettis. cargo
Bure	Apr. 1	Collision	Antwerp	Slight dam.	Harrison T. Beacham	Apr. 27	Hvy. weather	At sea	Leak.
Brandon	Apr. 1	Collision	River Plate	Undam.	Halizones	Apr. 28	Fire	Barbados	Not stated
Burnholme	Apr. 1	Grounded	Dis. cargo	Floated	Hsin Peking	Apr. 17	Grounded	nr. Woosung	Slight, rud. & prop.
Bee	Apr. 8	Not stated	Island of Maul	Wrecked	Harmony	May 1	Ashore	Far Rockaway	Prob. total loss
Blois	Apr. 7	Collision	Straits of Dover	Badly dam.	Inchyra	Apr. 1	Disabled	Yarmouth	Eng. trble.
Belique	Apr. 8	Grounded	Aastrueel Rds.	Floated	Iris	Apr. 2	Collision	nr. Vegesack	Grounded; leak.
Belgium	Apr. 17	Collision	Toledo	Some dam.	Inneroy	Apr. 2	Collision	nr. Vegesack	Grounded; leak.
Brookton	Apr. 23	Ashore	Russell Is.	Not stated	Istiklal Industria	Apr. 6	Collision	Stamboul	Slight dam.
Bainbridge	Apr. 22	Struck pier	Chicago	Not stated		Apr. 7	Disabled	Lisbon	Def. mchy.
Bawean	Apr. 9	Collision	Liverpool	Not stated	Jeseric	Apr. 13	Collision	New York	Undam.
Boston	Apr. 30	Disabled	Duluth	Brok. wheel	Jean	Apr. 16	Hvy. weather	off Fire Island	Lost sails
Bethelridge	May 1	Disabled	New York	Eng. trb.	J. M. Guffey	Apr. 17	Aground	off Tybee	Floated
Bulgarian	Apr. 16	Holed	Tallinn	Not stated	Joao Alfredo	Mar. 31	Fire	Rio Janeiro	Not stated
Buchanness	Apr. 16	Stranded	nr. Alderney	Ext. dam.	John Bracewell	Apr. 19	Disabled	Gloucester	Leaking
Chas. F. Randolph	Apr. 7	Struck ledge	New London	Leak.	Jeannette	Apr. 25	Disabled	Boston	Mchy. trble.
Carmania	Apr. 3	Ashore	Hoy Island	Not stated	James D. Reed	Apr. 27	Struck obstr.	Sault Ste. Marie	To plates
City of Simla	Apr. 3	Ashore	Alexandra Dock	Jettis. cargo	Jessie Maersk	Apr. 7	Grounded	Cardenas	Undam.
Chippewa	Apr. 21	Disabled	nr. New York	Boil. trble.	J. L. C.	Apr. 9	Disabled	nr. Fayal	Broke hawsr
City of Portland	Apr. 21	Waterlogged	Sandy Hook	In tow	James E. Davidson	Apr. 26	Hit pier	Ashtabula	Two plates.
Champion	Apr. 19	Foundered	nr. Spencers Is.	Not stated	J. W. Parker	Apr. 28	Fog, ashore	Sydney Harbor	Bad pos.
Chas. T. McAllister	Apr. 23	Sank	Brooklyn	Raised	Jan	Apr. 16	Touched ground	Fehmarnsund	Leaking
Cape Blomidon	Apr. 22	Caught on bank	Apple River	Minor dam.	James O. Hamlen	Apr. 30	Struck	Nantucket Shoals	Not stated
Cornishman	Apr. 23	Grounded	nr. South Tra- verse	Not serious	Kohlenimport	Apr. 1	Collision	Hamburg	Not stated
Casey	Apr. 25	Ashore	Providence Chan.	Leak. slight	Koursk	Apr. 3	Disabled	Cardiff	To bottom
Castilian	Mar. 31	Collision	New York	Damaged	Kansas	Apr. 6	Fire	Brisbane	To plates
Coquetmede	Apr. 1	Collision	Barry	Not stated	Kate G. Pederson	Apr. 28	Disabled	Sydney	Leak.
Cabo Queijo	Apr. 7	Collision	Marsailles	Slight dam.	Laurock	Apr. 1	Gale	off Rum Row	Lost anchor
Canadian Conqueror	Apr. 7	Collision	St. John	Rud. and prop.	Llewellyn Rowland	Apr. 21	Ashore	off Brenton's Pt.	Total loss
Calcite	Apr. 17	Collision	Toledo	Some dam.	Lawrence Murdock	Apr. 24	Sank	off Mashawena Is.	Not stated
C. F. Bielman Jr.	Apr. 22	Collision	Detroit River	Bow dam.	Lewis H. St. John	Apr. 24	Gales	Lubec	Leak.
Canada	Apr. 10	Ashore	on Saltholm	Floated	L. L. Barth	Apr. 21	Collision	Chicago	Not stated
Celte	Apr. 9	Disabled	nr. Fayal	Not stated	Liv	Apr. 9	Disabled	Christiansund	Eng. dam.
Chelohsin	Apr. 10	Stranded	Vancouver	To stem.	Lewis Luckenbach	Apr. 29	Aground	Pea Patch Is.	Not stated
City of Seattle	Apr. 26	Disabled	Barnegat	Eng. trble.	Leningra	Apr. 17	Ice, dis.	Helsingfors	Not stated
Camamu	Apr. 28	Collision	Staten Is.	Damaged	Munalbro	Apr. 7	Tossed against wharf	Portland	Not dam.
Canada	Apr. 28	Collision	Staten Is.	Damaged	Margaret Spencer	Mar. 31	Disabled	Ponce	Leaking
City of Singapore	Apr. 27	Fire	Adelaide	Prob. total loss	Metropolitan No. 23	Apr. 11	Sunk	Brooklyn	Not stated
Caspian	Apr. 30	Disabled	Newcastle	To stack	Mary G. Maynard	Mar. 22	Hvy. weather	At sea	Hold flood'd
Craigielea	Apr. 16	Disabled	Ardentinny	Broke mast	Manuel Calvo	Apr. 1	Disabled	Bermuda	Prop. broke
Caudbec	Apr. 16	Collision	Aastrueel Rds.	Undam.	Matsonia	Apr. 8	Disabled	San Francisco	Eng. trble.
David C. Ritcey	Apr. 22	Sinking	At sea	Set on fire	Mary Summerfield	Apr. 2	Collision	Eastham Canal	Unknown
Draco	Mar. 31	Fire	At sea	Cargo dam.	Marie Richardson	Apr. 1	Collision	Aberdeen Channel	Not serious
D'Entrecasteaux	Apr. 8	Disabled	Corunna	Leaking	Minnekahta	Apr. 2	Collision	Hamburg	Not stated
Dominion Miller	Apr. 28	Collision	River Thames	Damaged	Maindy Court	Apr. 19	Disabled	Clifton, S.I.	Lost anchor
Duluth	Apr. 30	Ice	Duluth	Wheel dam.	Maximo Gomez	Apr. 17	Around	e. Pensacola	Undam.
Deutschland	Apr. 30	Fire	Hamburg	To cargo	Muniplace	Apr. 24	Fire	Brooklyn	Dam. slight
Dorothy	Apr. 22	Fire	nr. Block Is.	Cabin gutted	Myers Bros.	Apr. 21	Fire	Ashtabula	Badly dam.
Dynamo	Apr. 15	Fire	Wapping	Unknown	Monte Pasubio	Apr. 2	Disabled	Mogotes Pt.	Total loss
E. W. Oglebay	Apr. 15	Disabled	Toledo	Bot. dam.	Malaya	Apr. 3	Ashore	nr. Amoy	Prob. total wreck
Expresso	Apr. 7	Driven ashore	off Monomoco Pt.	Com. wreck	Maine	Apr. 7	Hvy. weather	St. Michael's	To plates
Esther Elina	Apr. 17	Disabled	Fayal	Boil'r leak.	Marienfels	Apr. 8	Grounded	nr. Bats	Undam.
Ena A. Moulton	Apr. 4	Gales	Rum Row	Leak. badly	Maizar	Apr. 2	Disabled	Arabian Sea	Lost props.
Eliza Goreham	Apr. 2	Ashore	off Ward's Is.	Undam.	Malakuta	Apr. 5	Fouled quay	Gibraltar	Dam. below waterline
Edward Luckenbach	Mar. 31	Collision	Norfolk	To stem.	Maple Branch	Apr. 7	Ashore	Guayaquil	Not stated
Euterpe	Apr. 1	Collision	Barry	Some dam.	Marianga Mari	Apr. 10	Disabled	Portland	To shaft
E. E. Slick	May 1	Stuck in ice	Duluth	Not stated	Moygannon	Apr. 11	Aground	Warren Pt.	Undam.
Eugene C. Roberts	Apr. 21	Ice	Montreal	To bow	Mercutio	Apr. 9	Collision	Liverpool	Rudder
Euholm	Apr. 17	Disabled	Antwerp	Eng. trb.	Maudie M. Morey	Apr. 26	Disabled	At sea	Broke shaft
Elmbay	May 1	Aground	Crosshead Lt.	Not stated	Middletown	Apr. 30	Disabled	off Huntington	Hold flood.
E. Y. Townsend	May 4	Struck	Detroit River	Bilge dam.	Mizapore	Apr. 17	Fire	Shanghai	Not stated
Fulton	Apr. 15	Aground	Tacoma	No dam.	Maude M. Morey	May 2	Aground	Amboy Harbor	Not stated
Francillon	Apr. 6	Collision	Stamboul	Undam.					
Frangestan	Apr. 2	Fire	At sea	Sunk					
Fair Head	Apr. 7	Grounded	Waterford	No dam.					
Frank Seither	May 1	Grounded	Port Arthur	Released					

Late Flashes On Marine Disasters

Brief Summaries of Recent Maritime Casualties—
A Record of Collisions, Wrecks, Fires and Losses

NAME	DATE	NATURE	PLACE	DAMAGE RESULTING	NAME	DATE	NATURE	PLACE	DAMAGE RESULTING
Nordfarer	Apr. 22	Grounded	Cape Fear River	Floated	Sveadrott	Apr. 1	Collision	Barry	Some dam.
Narva	Apr. 1	Disabled	Brunsbittelkoog	Slight to eng.	System	Apr. 11	Collision	off Rotherhithe	To port side
Narenta	Apr. 6	Disabled	nr. Rio Janeiro	Engine	Ste. Anne	Apr. 7	Collision	Straits of Dover	Sunk
North Star	Apr. 28	Ice	Duluth	Wheel dam.	Silverthorn	Apr. 10	Stranded	Portrush	Unknown
Nordstjernen	Apr. 30	Fire	Cienfuegos	Crews quar.	Storborg	Apr. 9	In distress	S.E. Hyeres Rds.	Not stated
Normal	Apr. 16	Collision	North Sea	Sinking	Springfield	Apr. 26	Boiler trbl.	Mayport Bar	Grounded
Novo	Apr. 16	Fire	Gothenburg	Slight	Sagittarius	Apr. 16	Collision	Austruweel Rds.	Slight dam.
N. F. Leopold	May 1	Collision	Point Aux Pines	Brok. plates	Starlight	Apr. 15	Hit quay	Portugalete	To plates
New York News	May 3	Collision	nr. Brooksville	Slight dam.	Sagaporack	May 1	Disabled	Delaware	Signals and steerer
Nisbet Grammer	May 3	Collision	nr. Brooksville	Slight dam.	Thomas	Apr. 10	Fire	Brooklyn	Not stated
Orcus	Apr. 14	Disabled	At sea	Mchy. trble.	Texel	Apr. 1	Fire	Hull	To boats
Overfalls	Apr. 20	Disabled	nr. Philadelphia	Ropeinprop.	Tyne Abbey	Apr. 3	Disabled	Amble	Eng. tr'ble.
Oakhurst	Apr. 24	Fire	New York	Not stated	Truro Queen	Apr. 20	Gale	off Nova Scotia	To mast & sails
Oltu	Apr. 2	Collision	Galatz	Serious dam.	Trondhjemfjord	Apr. 1	Collision	Barry	Damaged
Orari	Mar. 31	Grounded	La Plata	Floated	Themis	Apr. 1	Disabled	Cuxhaven Roads	Slight eng.
Orient	Apr. 3	Disabled	Beachy Head	Prop. broke	T.S. Christie	Apr. 21	Collision	Chicago	Not stated
Otto Ippen 20	Apr. 2	Ice, sunk	nr. Stralsund	Not stated	Trebartha	Apr. 27	Disabled	New York	Leaking
Oswiga	Apr. 1	Collision	Hamburg	To stem	Thorpe Grange	Apr. 16	Touched bot.	Isla Media Kirke Canal	Not stated
Othello	Apr. 5	Collision	Hull	Not stated	Ural	Apr. 2	Fire	Varna	Sunk
Perseo	Apr. 20	Ashore	Bermuda	Not stated	Vasconia	Mar. 31	Fire	Portland, Me.	Slight
Prefet Collignon	Apr. 1	Collision	Barry	Some dam.	Virginia	Apr. 7	Collision	River Scheldt	Stem dam.
Petros	Apr. 2	Collision	Galatz	Not stated	William K. Field	Apr. 7	Collision	Toledo	Rud. frame
Port Melbourne	Apr. 2	Disabled	Table Bay	Boilers	Westwego	Apr. 9	Collision	Panama Canal	dam.
Pengreep	Apr. 9	Disabled	Gibraltar	Frame, prop.	West Eldara	Apr. 9	Fire	nr. Bishops Light	To plates
Pescawha	Apr. 20	Hvy. weather	At sea	To jib. & rwd	Wawenock	Apr. 1	Blizzard	At sea	Slight
Presque Isle	May 1	Aground	Point Iroquois	Released	West Ivan	Apr. 14	Struck sub-merged obj.	San Bernardino Straits	Badly dam.
R. W. Hendry	Apr. 7	Gale	Boston	To bridge	Westbury	Apr. 1	Blown on shore	nr. Queuen Lthse.	Not stated
Remus	Apr. 8	Disabled	Valparaiso	Broke bldes.	William Donovan	Apr. 10	Collision	Aberdeen	Slight dam.
Ruth	Apr. 9	Disabled	nr. Savannah	Prop. dam.	Walmer Castle	Apr. 9	Fire	Southampton	Stem dam.
Ruth Alexander	Apr. 24	In distress	Trinidad Head	Not stated	Wildenfels	Apr. 8	Collision	Astruweel Rds.	Undam.
Republique	Mar. 31	Ashore	nr. Agadir	Not stated	West Mahwah	Apr. 26	Fire	Clifton, S.I.	Slight
Remus	Apr. 7	Disabled	Valparaiso	To props.	Weser	Apr. 16	Collision	North Sea	Undam.
Ran	Apr. 17	Ashore	Middlegrunden	Not stated	Wm. Booth	Apr. 23	Blown on rocks	Nigger Island	Slight dam.
R. D. Rickmers	Apr. 17	Ashore	Lylemen Pass	Leak., beached	Ziesing	Apr. 27	Struck obstre.	Sault Ste. Marie	To plates
Salford	Apr. 2	Collision	Eastham Canal	Unknown					
Service	Apr. 2	Fire	Northport, L. I.	Totally dest.					
Solo	Mar. 31	Grounded	Antwerp	Leak.					
Silversand	Mar. 31	Struck rocks	Oran	Dam. slight					
Satsuma	Apr. 15	Ashore	Miike	Undam.					
Seboniac	Apr. 26	Fire	New York	Spars and deck					

Ship Takes 525 Days to Deliver Cargo

ON JULY 15, 1922, the GARTHWRAY, a fine, full-rigged sailing ship of 1937 tons, after unloading a cargo of nitrates in Leith, Scotland, cleared from Grangemouth with a cargo of coal for Iquique, Chile.

The coal was due in Chile in the autumn of 1922, but owing to a succession of accidents and ill luck it was not delivered until more than a year overdue.

After leaving the Firth of Forth, all went well until the GARTHWRAY was off Cape Horn and about to make the turn from the Atlantic to the Pacific ocean. Here she was struck by a gale and spars, sails and rigging were smashed, the crew including nine apprentices, having their work cut out to keep the ship afloat. She was so badly damaged that the captain sought shelter in the River Plate port of Montevideo, where she remained four months under repair and a new master took command.

The GARTHWRAY again attempted the Cape Horn passage and met with squalls



FULL RIGGED SHIP GARTHWRAY WHICH GOT WITHIN 2000 MILES OF HER DESTINATION BUT HAD TO TURN BACK AND SAIL AROUND THE WORLD BEFORE DELIVERING HER CARGO

of hurricane force doing much damage to the spars, one of the yards being entirely lost. Bad weather continuing and the ship being in distress she again made for a shelter port—and this time Table Bay, South Africa, was decided upon. After sighting land, she was driven back to sea and it took five days to get in touch with land again, when she was towed in to port, to again undergo repairs.

The captain decided not to attempt the passage of Cape Horn again, but to proceed east passing Tasmania and New Zealand.

Finally the GARTHWRAY safely reached Iquique on Dec. 22, 1923, 525 days after leaving the Firth of Forth, probably a record slow passage.

J. F. PAIGE, formerly operating manager of the Halifax Ship Yards, Halifax, N. S., has become manager of the operating department, gulf district, for the shipping board, with headquarters in New Orleans.

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review

By Harry Bowne Skillman

Attorney at Law

WHERE vessels were approaching on courses which made the starboard rule applicable, but at a point where all vessels navigating that part of the lake were accustomed to change their course, so that each might expect a change on the part of the other, they are governed by the starboard hand rule, and not by the exception to that rule applying to vessels navigating channels which are considered as meeting head and head, regardless of their respective bearings, as they follow the turnings of the channel, it appearing that the width of the navigable water at that point was one and one-half miles, so that either vessel could have kept on its course for an indefinite distance—*EDWIN SLICK*, 286 *Federal Reporter* 43.

* * *

The constitution of the United States confers authority upon congress to regulate navigation, it was pointed out in the case of *Loud v. United States*, 286 *Federal Reporter* 56. Incident to that power congress has the right to determine what constitutes a menace or obstruction to navigation, and, by section 20 of the rivers and harbors act of March 3, 1899, has delegated its authority to make such determination to the secretary of war. "It is the purpose and intent of section 20," said the court in this case, "that this decision of the secretary of war shall have the same force and effect as direct action by congress itself. Such power, of course, can not be exercised arbitrarily or beyond constitutional limitations." It was further held that the owner of a vessel is not personally liable for the expense incurred by the government in removing obstructions to navigation under authority of said section 20, but, on the contrary, that the claim for such expenses must be asserted directly against the vessel and its cargo.

* * *

Every element of a meritorious salvage service was present in the case of *DELMIRA*, 283 *Federal Reporter* 441, said the court. The sea, the court found, was rough, and, because of the nature of the cargo (crude oil), there was constant danger of the loss of life and property. The work was characterized by industry, efficiency, and good, even daring, seamanship. The only thing suggested to mar the salvage service was that some of the clothing of the crew was taken away by the salvors. "Of course," said the court, "salvors must exercise the utmost of good faith, and they must care for property, and not loot it, upon pain of losing all right to a salvage board." It was shown, however, that the crew of the vessel were aware for several hours of the probability that it would have to be

abandoned, and had ample opportunity to gather up their effects; also, that the only things shown to have been taken off were some lanterns and phonographic records, all of which were almost immediately returned, under orders of the commanding officer. Under the circumstances, an award of \$18,000 was considered proper.

* * *

Services rendered by a master stevedore in discharging and loading cargo are included in "other necessaries," as used in the merchant marine act, section 30, subsection P, giving a lien for same.—*HENRY S. GROVE*, 285 *Federal Reporter* 60.

* * *

While, in salvage cases, fraudulent misconduct and lack of good faith on the part of the salvors effects a forfeiture of salvage, it was decided in the case of *Hudson v. 450 Tons of Bituminous Coal*, 283 *Federal Reporter* 678, that the use by libelants, who had contracted to remove a cargo of coal from a stranded vessel, of a small quantity of the coal, not exceeding a ton, for trial with a view to purchasing the cargo if satisfactory, did not constitute embezzlement or fraudulent conduct which would deprive them of their right to recover on the contract, or to a lien.

* * *

"That one vessel has committed a gross fault does not absolve another, with which it is in danger of colliding, from the use of such precautions to avoid the collision as prudence and good seamanship may dictate. * * * That it is the duty of a vessel at anchor to adopt such means to avoid a threatened collision as can be taken without extraordinary risk has been held in many cases."—*BALTIMORE*, 283 *Federal Reporter* 728.

* * *

"When a vessel under steam runs down a ship at anchor in broad daylight, that fact is by itself *prima facie* evidence of fault, and the vessel under way cannot escape liability for the consequences of her act, except by proving that a competent seaman could not have avoided the collision by the exercise of ordinary care."—*SUEDCO*, 283 *Federal Reporter* 796.

* * *

"One maintaining a drawbridge over navigable waters is bound to exercise reasonable care not to impede the safe navigation of vessels passing through nor to occasion any delay to such vessels."—*Eureka Towing Line v. City of New York*, 283 *Federal Reporter* 858.

* * *

When vessels are approaching each other upon courses which diverge as much as 1½ or 2 points, they are

meeting "end on or nearly so," it was declared in the case of *AMOLCO*, 283 *Federal Reporter* 890, and it is the duty of each to port her helm; otherwise they would not pass to the right, or on the port side of each other, as required by article 18 of inland rules.

* * *

The purpose of what is familiarly known as the "break-down" clause in a charter is what its name denotes, viz. to guard against losses arising from breaks in machinery and similar accidents at sea, preventing the working of the steamer. It has no relation, the court held in the case of *FORT MORGAN*, 284 *Federal Reporter* 1, to damages resulting from negligence of the navigating officers in stranding a vessel in making a landing. The "general exception" clause, which is well understood as applying to cases arising from "perils of the sea," is available only to those who are free from fault.

* * *

A vessel in tow was held, in the case of *EDGAR H. VANCE*, 284 *Federal Reporter* 56, not chargeable with fault contributing to her loss, because of an error in her navigation after she had been abandoned at sea in a storm by the towing vessel, where, through the fault of such vessel, the master and pilot had been kept continuously on duty during the whole of a day and night, without food until late in the day.

* * *

"Where a cargo is shipped in good order and is damaged in transit, the damage is presumably attributable to the fault of the carrier, and the burden is cast upon the carrier to show that the damage is an excepted peril."—*Kaufer Co. v. Luckenbach Steamship Co.*, 284 *Federal Reporter* 160.

* * *

"'Seaman,' " said the court in the case of *Hoof v. Pacific American Fisheries*, 284 *Federal Reporter* 174, "no doubt once meant a person 'who can hand, reef, and steer'—a mariner in the full sense of the word. As conditions changed, and necessities of changes increased, 'seaman' received an enlarged meaning. The cook and surgeon, and employees other than able seamen, were included. * * * a bartender was ranked as a seaman. * * * a muleteer, performing the services of a watchman, was given the status of a seaman. * * * a wireless operator, employed by another, but placed on the articles at the nominal sum of 25 cents a month, was classed a seaman. Section 4612, R. S. (section 8392, Comp. St.), provides that: * * * Every person * * * who shall be employed or engaged to serve in any capacity on board the same (vessel) shall be deemed and taken to be a seaman. * * *"

Late Decisions in Maritime Law

Legal Tips for Shipowners and Officers

Specially Compiled for Marine Review
By Harry Bowne Skillman
Attorney at Law

WHEN the hull of a new ship has been launched, it becomes a vessel, so as to be subject to a maritime lien under section 1 of the act of June 23, 1910; a claim for spare or reserve engine parts furnished to the new and uncompleted vessel after the launching, by one other than the contractor for her construction, is not one for construction but for supplies, for which a lien is given by such act. A machine for purifying used lubricating oil, furnished to a new ship, was not a part of her construction, it was decided in the case of *PINTHIS*, 286 *Federal Reporter* 122, but a supply or necessary, for which the furnisher was entitled to a lien.

* * *

It is the custom of the port of New York that when a steamship engages a berth, wharfage by that name is due and payable, not only while she lies alongside, but while the discharging space is occupied by her cargo. "Wharfage" was defined by the court in the case of *Old Dominion Steamship Co. v. City of New York*, 286 *Federal Reporter* 155, as money paid for landing goods upon or loading them from a wharf.

* * *

"It is the settled rule that a stipulation (in a shipping bill) that damages to cargo must be asserted within 90 days or a reasonable time after they accrue is binding. * * * The limitation in a bill of lading is therefore valid, unless good reason is given for delay."—*HENRY S. GROVE*, 283 *Federal Reporter* 1019.

* * *

"Where the general owner places the ship in the exclusive possession and control of another, such other becomes the owner *pro hac vice* with respect to liability for wages and other expenses."—*Everett v. United States*, 284 *Federal Reporter* 203.

* * *

Where a seaman became sick without his fault during a voyage, and was placed in a hospital at a certain port, and on his discharge from the hospital in a penniless condition was required to sign a statement that he accepted his wages, which had been left with the United States consul, as payment in full for the voyage in order to obtain such wages, he was entitled to recover full wages for the remainder of the voyage after deduction of the amount earned in other employment during the time of the voyage, since his status was not that of a discharged seaman, though he signed a receipt in full, and he did not waive his claim under the shipping articles by accepting such other employment; however, such seaman, in an action to recover such wages, was not entitled to double pay under revised statutes, section 4529 (Comp. St. sec

tion 8320), such statutes being inapplicable and being designed for the protection of seamen, to prevent abuses, and subjecting seamen to expense while waiting for settlement.—*Halvorsen v. United States*, 284 *Federal Reporter* 285.

* * *

Where libelant was employed as a cook, and served as such for several days before commencement of the voyage, and was then discharged, the fact that he was not a satisfactory cook and that he spoke disparagingly of the master, saying that he was "cheap," prevented recovery under section 8318, U. S. Comp. Stat., entitling seamen, discharged without fault before commencement of the voyage or before one month's wages was earned, to an additional month's wages. "The cooking on a vessel's trip is very important," said the court in the case of *S. P. WILDER*, 284 *Federal Reporter* 728, "and if not good it infects the whole crew and creates dissatisfaction."

* * *

The unqualified transfer of a bill of lading to order notify vests the transferee with a right of action against the carrier vessel for breach of contract by making delivery to the party to be notified without production of the bill of lading.—*NIAGARA*, 284 *Federal Reporter* 971.

* * *

"Corporations, like others, are entitled to the benefit of limitation of liability from conditions to which they are not privy, and of which they have no knowledge, and they are chargeable with knowledge of the existence of defects, or become privy to acts of negligence causing the same, only when persons representing the corporation in such capacities as to speak for the same are guilty of some negligence or omission to maintain the barge in seaworthy condition. They are likewise exempt from liability for the negligence of third persons employed to repair and put the barge in seaworthy condition, where they have, in good faith, exercised due diligence and care in the selection of such persons; that is to say, those trustworthy, experienced, and capable of performing the service, and of good reputation in the business."—*Pocomoke Guano Co. v. Eastern Transportation Co.*, 285 *Federal Reporter* 7.

* * *

Where an agent of a barge owner, a corporation, over the telephone contracted with a purchasing agent of libellant to move a cargo from a steamship in a harbor to a nearby factory in the vicinity, nothing being signed, and no charter-party being entered into, neither the corporation itself nor any of its officers having signed any paper giving a warranty of any kind, or verbally do-

ing so, if from the phone message a warranty of seaworthiness of the vessel may be implied, it would not operate to create an express warranty on the part of the owner.—*Pocomoke Guano Co. v. Eastern Transportation Co.*, 285 *Federal Reporter* 7.

* * *

While the statute of limitations is not known to admiralty jurisprudence, the court may, in its discretion, apply the doctrine of laches as equivalent; hence statutes barring old or stale claims are persuasive but are not controlling in admiralty causes. Although the liability of an employer to a seaman injured in his employment was defined by the maritime substantive law, yet where the seaman elected not to seek redress in admiralty, but to come into the law court, his remedial rights, it was decided in *Bonam v. Southern Menhaden Corp.*, 284 *Federal Reporter* 362, were governed by the procedure of the latter court, and, as limitations pertain to the remedy, not to the right, the employer had the right to invoke the state statute of limitations.

* * *

The return of a vessel to port on account of storm, although necessitated by unseaworthiness of the vessel, was not an "unjustifiable deviation" which would deprive the carrier of the benefit of the bill of lading contract limiting liability.—*Turret Crown*, 284 *Federal Reporter* 439.

* * *

While the rule that allowances in salvage cases ought to be in such amounts as to encourage salvors in the saving of life and property even at dangers incurred by themselves was recognized in the case of *Gypsy Queen*, 284 *Federal Reporter* 607, the court said that "on the other hand, awards should not be made in such amounts as to excite the cupidity of persons, in order to take advantage of the misfortunes of ships in distress." "In cases where persons performing services to ships in distress allow their cupidity to overcome all considerations of equity and good conscience," the court continued, "the courts should visit upon such persons the penalties visited upon salvors who deal dishonestly with the salved property."

* * *

An intermediate ocean carrier, under a through bill of lading from Los Angeles to Olympia, Wash., was within its rights, it was decided in the case of *Pacific Steamship Co. v. State of Washington*, 284 *Federal Reporter* 712, in transshipping the goods at Seattle, the customary end of its route, though its vessels sometimes went as far as Tacoma, and it was not liable for loss of the goods by sinking of the vessel of the connecting line.

Business News for the Marine Trade

Tampa Shipbuilding & Engineering Co., Birmingham, Ala., plans constructing a plant at Tarrant City. Ernest Kreher is president.

The Great Lakes Corp., 288 East Water street, Milwaukee, has prepared preliminary plans for constructing a plant to build speed boats. The plant is to cost approximately \$150,000, and is to be located at Roscoe near California street.

J. W. Borneman, Gravenhurst, Ont., is reported as requesting prices on a planer and other tools and machinery for building boats.

The Disappearing Propeller Boat Co., Ltd., Toronto, Ont., has been incorporated for \$500,000 to manufacture propellers, build engines and boats of all kinds, by Arthur B. Mortimer, Alfred Bunting and Ernest M. Lee.

Common Bros., Sunderland, England, have contracted with Short Bros., of that city, for constructing an 8800-ton deadweight steamer.

Sir Robert Ropner & Co., West Hartlepool, England, have contracted with William Gray & Co., that city, for a cargo steamer of about 8600 tons deadweight.

Heavy damage was incurred recently when fire swept the machine shop of the Union Construction Co. on the waterfront, Oakland, Calif.

Coastwise Steamship & Barge Co., has purchased the steamer J. H. PLUMMER, for the Anyox-Stewart, Britannica Beach, Vancouver, B. C., and Tacoma, Wash., service of the company.

The Court line has ordered a single-deck steamer of 8,000 tons deadweight from Workman, Clark & Co., Belfast.

The Seaboard Shipping Corp. of New York has increased its capitalization from \$16,000 to \$56,000.

Consolidated Navigation Co., Merchants & Manufacturers building, 22 Light street, Baltimore, has been incorporated for \$300,000. The company is an amalgamation of the Export Transportation Co., W. A. Blake & Co. and the Baltimore Steamship Co., Inc.

Merrill-Stevens Co., Miami, Fla., contemplates constructing \$60,000 marine ways and sheds, of steel and frame construction.

The Sterling Engine Co., 1250 Niagara street, Buffalo, has filed plans for a brick addition to the present plant, expansion to cost about \$65,000. C. A. Criqui is president of the company which builds marine and commercial engines.

New Orleans Standard Fruit & Steamship Co. has been organized to transport goods with headquarters at New Orleans.

New York—Atlantic Steamship Co., Jersey City, N. J., has been incorporated for \$2,500,000 to conduct ship brokerage business.

Vendoeur Corp., New York, has been incorporated with \$20,000 capital to carry on a ship brokerage business.

Columbus Shipping Co., New York, has been dissolved.

De Paissy Boat Corp., New York, has been incorporated with 1000 shares no par value common stock, by K. A. Christian, J. W. McCoy and S. P. Henshaw, with Lazenby & Bigelow, 2 Rector street, as attorneys.

Abell & Tomlinson, New York, have been incorporated with \$10,000 capital to carry on navigation, with E. E. and R. Tomlinson and C. T. Abell as incorporators. C. F. Brown, 32 Liberty street, New York, is attorney.

Jason Navigation Corp., New York, has been dissolved.

Empire Canal Corp., New York, has been incorporated with 1000 shares non par value common stock to carry on a navigation business, by B. Burroughs, T. Arnolds and T. F.

Business Changes

The United American lines, passenger department, on May 19, occupied enlarged quarters at 35-39 Broadway, New York City. Rapid expansion of the joint services maintained by the United American Lines and the Hamburg-American Line, has for some time rendered the old booking offices inadequate.

* * *

Consolidation of the Chicago offices of the Pacific Steamship Co. Admiral Oriental line and Dollar Steamship line is announced by R. Stanley Dollar, vice president of the Dollar company, who states that the consolidation in no way affects the status of the three companies as separate organizations.

* * *

The Federal Shipbuilding & Dry Dock Co. is the new corporate name taken on May 3, by the Federal Shipbuilding Co. The general offices and works continue at Lincoln Highway, Kearny, N. J., with the sales office at 26 Beaver street, New York City.

* * *

The Dock & Terminal Engineering Co., Cleveland, has acquired the engineering business formerly conducted by the Cleveland Dock Engineering Co.

Ohea, with H. F. Holthusen, 64 Wall street, as attorney.

Bacoi Steamship Co., Dover, Del., has been incorporated with \$100,000 capital stock, to own and operate steamboats, by E. E. Craig, Dover.

United States Lighterage Corp., New York, has been incorporated for \$5000 by T. E. Heavy, A. Ciscio, and B. F. Ciscio, 1227 Eighty-sixth street, Brooklyn, N. Y., as attorney.

The Baker Boat & Canoe Co., Buckeye Lake, O., has been incorporated for \$5000 to construct, own and operate boats, by Clarence E. Baker, J. E. Vernon, A. Meier, Rosanna Floyd and J. Dale McNamar.

The Algonac Machine & Boat Works, Algonac, Mich., has been organized to continue the manufacture of marine engines. Operations will be increased and plans are being made to convert the present engines into stationary motors for lighting, hoisting and pumping outfit. Larger motors will be added to the liner later. Some time ago the company acquired the manufacturing rights of the Hess Motor Co., Detroit, and the Gierholz Gas Motor Co., Marine City, Mich.

Horace E. Dodge Boat Works, Inc., Detroit, has been incorporated with 7500 shares of no

par value stock and \$242,500 active capital, to build, rebuild and sell boats and marine motors. Horace E. Dodge, Anna Thompson Dodge, Grosse Point Village, and William Robert Dey, Detroit, are incorporators.

Columbia Transport Co., New York, has been incorporated for \$25,000 to carry on a navigation business, by D. C. Fuller, A. Marques, with C. M. Setlow, 21 Park Row, as attorney.

Jenn-Far Mercantile Corp., Lakeview, N. Y., has been incorporated to manufacture and deal in automobiles and boats, with \$5000 capital stock, by E. J. and A. S. and E. B. Jennings, with Griffiths & Gardner, Hempstead, L. I., N. Y., as attorneys.

Dichmann, Wright & Pugh, Wilmington, Del., have been incorporated for \$100,000 to act as steamship agents, and carry on other navigation business.

Peden Iron & Steel Co., Houston, Tex., is constructing brick warehouse with 100-foot frontage on Harrisburg boulevard to take care of the increasing needs of its ship chandlery. Constantly expanding port requirement has expanded the ship chandlery business there considerably.

Observation Steamship Co., New York, has been dissolved.

New Trade Publications

FORGINGS—The Vulcan Steam Forging Co., Buffalo, has issued in 28 pages a handbook making clear the field of forgings in production of parts. Much information developed by a maker of forgings is contained in this booklet, of value to the buyer of forgings, as to specifications and ordering. The application of the forging in place of other forms of steel is set forth. Halftones show the variety of forms easily forged and tables of various sorts complete its informative value.

PIPE CUTTERS—Three new sizes of pipe cutters added to the line of the Borden Co., Warren, O., are described in a bulletin by that company. They operate on the same principle as other cutters made by this company, but the application is different, allowing large sizes to be cut by hand or by the application of power if desired.

AIR COOLERS—The Griscom-Russell Co., 90 West street, New York, has issued a bulletin describing an air cooler used for cooling the air from generator windings by the use of turbine condensate. The cooling surface of this device is formed of tube elements, each being removable and having an outside diameter of $\frac{5}{8}$ inch. By using this cooler it is possible to use the air many times, thus keeping it dry and free from dust.

RIVET HEATERS—An oil fired portable heating furnace is described in a folder recently published by F. J. Ryan & Co., Philadelphia. This device is especially applicable for use in shipyards, by bridge builders, structural iron and steel workers. A sectional diagram shows the unusual features of the furnace.

COMBUSTION UNITS—The Duquesne Burner Service Co., Pittsburgh, sets forth in 20 well printed and illustrated pages the construction and application of its burner, designed for various types of boilers. Ease of regulation, exact adjustment and economy of fuel are claimed. The catalog presents details of construction, typical installations and statistical tables as to tests.